

Wilmington International Airport (ILM) Curbside Improvements Phase 2

Addendum 1 | Issue Date: April 11, 2025

This addendum includes the following:

1. RFI Log
 - a. Question Status are marked as either **Completed** or **In Review**. Only those that are marked **Completed** shall be incorporated into this addendum 1. All **In Review** will be addressed in future addendum.
2. RS&H Addendum 1
 - a. **Vol 1 Base Bid** - Addendum 1 Specs, Drawings, & Narrative
 - b. **Vol 2 Alt 1** Addendum 1 Drawings & Narrative
 - c. **Vol 2 Alt 3** Addendum 1 Drawings & & Narrative
 - d. **Vol 2 Alt 4** Addendum 1 Drawings & Narrative
 - e. **Vol 2 Base Bid** Addendum 1 Specs Drawings & Narrative
 - f. **CAD Files**
3. **Project Bid Manual R1**
 - a. **All revisions are in red text**
 - b. **Scopes of Work Revised**
 - i. 01A - General Trades
 - ii. 03A – Cast-in-Place Concrete
 - iii. 05A – Structural Steel
 - iv. 07C – Insulated Metal Panels
 - v. 09E – Paints
 - vi. 31A - Sitework
4. **Terrazzo Submittal from Previous Work at ILM**
5. **VIRTUAL PREBID MEETING: Tuesday April 15, 2025 at 10:00 AM**
 - a. LINK TO JOIN: <https://monteith.zoom.us/j/88975255789>

Monteith Construction Corp.

MONTEITH

208 Princess Street, Wilmington, NC 28401 910.791.8101

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Wilmington International Airport (ILM)
Curbside Improvements Phase 2
REVISION 1



MONTEITH

BID MANUAL

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GENERAL INSTRUCTIONS & INFORMATION TO BIDDERS

Receipt of Formal Bids

Only prequalified trade partners are permitted to submit bids for FORMAL packages on this project. Bids must include all bid requirements as outlined. Failure to submit all information will be grounds for rejection of bid.

Formal Bid Packages include:

- #01A – General Trade
- #02A – Structural Demolition
- #03A – Cast-In-Place Concrete
- #04A – Masonry
- #05A – Structural Steel
- #07C – Insulated Metal Panels
- #07E – Waterproofing
- #08B – Glass and Glazing
- #09A – Framing and Drywall
- #09B – Ceilings
- #09C – Terrazzo
- #09E – Paints
- #21A – Fire Suppression
- #22A – Plumbing
- #23A – Heating, Ventilating and Air Conditioning
- #26A – Electrical
- #31A – Sitework
- #31B – Piles

Formal bids must be submitted in a sealed envelope marked with *Company Name* and *Bid Package* bidding. Formal bids will be received no later than **Tuesday, May 6, 2025 at 2:00 PM** at the following address:

Wilmington International Airport
Administration Conference Room, 2nd Floor
1740 Airport Blvd
Wilmington, NC 28405

Formal Bids will be opened and read aloud after bid closing in person at:

Wilmington International Airport
Administration Conference Room, 2nd Floor
1740 Airport Blvd
Wilmington, NC 28405

It is the bidder's responsibility to ensure that the bids arrive by the required bid date, time and location specified. Late bids will be rejected.

Pre-Bid Virtual Meeting

The voluntary pre-bid meeting will be held on **Tuesday, April 15, 2025 at 10:00 AM** via Zoom. This meeting is voluntary, but subcontractors are encouraged to attend.

<https://monteith.zoom.us/j/88975255789>

Meeting ID: 889 7525 5789

To join the Virtual pre-bid meeting, register with the link below, or click the link above:

Pre-Bid Questions/Clarifications

All questions and request for information shall be made in writing and submitted to Maria Rosales at mcardenas@monteithco.com. Responses to any questions/clarifications will be made in writing in the form of an addendum, if required. Any verbal response during the pre-bid period is not considered part of the contract documents unless included in addendum. The site will be available for bidders to review upon request. A site walk will be scheduled and announced at the Prebid meeting. The last day for questions/clarifications and substitution requests shall be submitted by Monday, April 21, 2025.

Submission of Formal Bids

Formal Proposals must be made in accordance with the following instructions and format provided in the Form of Proposal and must be fully completed. The Bidder shall assume full responsibility for timely delivery at the location designated for receipt of Bids.

Bids must contain the following Information:

1. Bid Form (Provided)
2. Bid Bond (5% for all bids over \$500,000)
3. List of DBE Participation

Preparation of Bids

Proposals shall be complete, as called for in the Bid Proposal Form, without alterations. Bids containing conditions, omissions, alterations, items not called for, or irregularities of any kind, may be rejected for failure to comply with the requirements stated herein.

Include the full business address of the Bidder. Signatures shall be both in longhand and typed. Partnerships must sign the Proposal. In the case of a Proposal submitted by a Corporation, the Proposal shall be signed by an Officer duly authorized to sign on behalf of the Corporation.

Include with the Proposal Form the appropriate DBE Listing completed in its entirety. Bidder has made a good faith effort to solicit Disadvantaged Business Enterprises (DBEs) per NCDOT requirements, as subcontractors. The Disadvantaged Business Enterprise (DBE) goal for this project is 12.1%. The Bidders shall provide the Construction Manager with a notarized affidavit with its bid stating that it made the good faith effort required pursuant to 49 CFR Part 26 and the project percentage participation goal noted. The Bidder's failure to file the affidavit with its bid shall be grounds for rejection of the Bid.

Modification or Withdrawal of Bids

A request to withdraw a bid must be made in writing prior to the award of the contract, but not later than 72 hours after the opening of bids. Prior to the time and date designated for receipt of bids,

any bid submitted may be modified or withdrawn by notice to the party receiving bids at the place designated for receipt of bids.

Such notice shall be in writing over the signature of the Bidder. Written confirmation over the signature of the Bidder shall be hand delivered, mailed, and postmarked on or before the date and time set for receipt of bids, and it shall be so worded as not to reveal the amount of the original bid.

Withdrawn bids may be resubmitted up to the time designated for the receipt of bids provided that they are then fully in conformance with this Information for Bidders

Right to Reject Bids

The Construction Manager and Owner expressly reserve the right to reject any or all bids, to waive any informalities or irregularities in the bids received, and to accept that bid which in its judgment best serves the interest of the Owner.

Taxes

All applicable Federal, State and Local Taxes shall be included in the Bidder's proposal. The successful bidder shall provide the Construction Manager with documentation of North Carolina sales taxes paid for all purchases on the project in a form acceptable to the Construction Manager.

Time for Completion

Work shall be completed in accordance with baseline schedule provided. Bidders shall include in their price all overtime, escalation, manpower, on-site coordination, interfacing with other subcontractors, weather delays as referenced in general requirements to the contract, and all other factors necessary to adhere to this schedule. Include for off-time hours for all connections to existing utilities.

Bidders Referred to Laws

The attention of Bidders is called to the provisions of all Municipal, County and State laws, regulations, ordinances and resolutions, as well as laws, regulations, ordinance resolutions and permits relating to obstructing streets, maintaining signals, storing and handling of explosives, or affecting the Bidder, or his employees or his work hereunder in his relation to the Construction Manager or any other person. The Bidder shall obey all such laws, regulations, ordinances, permits or resolutions controlling or limiting Contractors while engaged in the prosecution of work under this Contract.

The provisions of this contract shall be interpreted in accordance with the laws of North Carolina and in accordance with the laws, ordinances, regulations, permits and resolutions of the City of Wilmington, County of New Hanover.

Preferred Brand Alternates

In accordance with General Statute GS 133-3, Specifications list one or more preferred brands as an alternate to the base bid in limited circumstances. Specifications containing a preferred brand alternate under this section must identify the performance standards that support the preference. Performance standards for the preference must be approved in advance by the Owner in an open meeting. Any alternate approved by the Owner shall be approved only where (i) the preferred alternate will provide cost savings, maintain, or improve the functioning of any process or system

affected by the preferred item or items, or both, and (ii) a justification identifying these criteria is made available in writing to the public. In accordance with GS133-3.

Substitutions

GS133-3 requires bidder proposed substitutions be submitted and approved prior to bid receipt. These would be bidder's "desired or voluntary" substitutions. Necessary or required substitutions can occur later when specified products are not available, late delivery, model changes, etc. then substitutions can be made after contract award per the usual procedure in the General Conditions.

Payment & Performance Bond

The base bid should not include the cost of the P & P Bond but be listed as a separate cost on the bid form.

EXHIBIT A-GENERAL REQUIREMENTS TO THE CONTRACT

The following general requirements to the Contract are in addition to and not in lieu of other provisions established elsewhere in the contract documents.

Article 1: Contract Documents

Contract Documents

The subcontract is comprised of the following contract documents: the AIA subcontractor agreement; exhibits to the contract; bid documents provided at time of bid including plans, specifications, addendum, and clarifications; amendments and change orders to the subcontract executed by the Construction Manager and subcontractor; the owner contract, in so far as the owner contract relates, directly or indirectly, to the work performed by the subcontractor. The subcontractor assumes all obligations that the Construction Manager assumes toward the owner. Subcontractor to complete sub-verification prequalification application.

Obligation to Study the Contract Documents

The subcontractor shall closely examine all contract documents in respect to the scope of their work and all scopes that interface with, rely on, or are performed concurrently with the scope of this contract. The subcontractor shall be responsible for all notes and details pertaining to their scope of work, regardless of what section of the plans notes/details are found.

In review of Exhibit B- scope of the work, subcontractor has reviewed all bid packages for overlaps or inconsistencies between scopes of work and notify the Construction Manager prior to submission of bids and within the pre-bid RFI timeline requirements. If overlapping scopes are not brought to the attention of the Construction Manager prior to bid, the subcontractor will be responsible for inclusion of overlapping scope.

The subcontractor has closely studied the plans, specifications, and addendum and notified the Construction Manager in writing of any error, omission, or ambiguity in RFI from prior to submission of the bid. With submission of its bid and further through post bid scope review meetings and execution of the subcontract agreement, the subcontractor acknowledges that they have included a full scope of work consistent with the intent of the contract documents.

The subcontractor has reviewed all bid/contract documents and takes no exceptions. All items related to the subcontractor's work included in these documents shall be included in the subcontract amount. Subcontractors' contract pricing must remain valid through the duration of the project and through completion of scope of work identified in this contract agreement. Contract values may only be adjusted through the change process spelled out in this contract and/or design documents. Any contract markups shall be submitted within 3 days of being sent via DocuSign.

Liquidated Damages

Liquidated damages for the project are tied to the completion of all project milestone dates in the following amounts:

- If the milestone is missed by 1 to 30 days, \$2,500 per day.

- If the milestone is missed by 31 to 60 days, \$5,000 per day.
- If the milestone is missed by 61 days and over, \$10,000 per day.

Refer to general conditions and subcontract agreement for the subcontractor's obligations to liquidated damages.

Execution of the Owner

The subcontractor understands that this subcontract is contingent upon execution of the contract agreement for guaranteed maximum price between the owner and Construction Manager, and that this subcontract shall be null and void without restriction or remedies to either party if the owner/Construction Manager agreement is not executed.

Article 2: Work by the Subcontractor

Execution of the Work

The subcontractor acknowledges that the scope of work is inclusive of all materials, supervision, labor, equipment, hoisting, tools, transportation, permits, insurance, submittals, warranties, and all other items required to provide a turnkey completion of the scope of work. Upon submission of the bid, the subcontractor acknowledges that bid documents may not be fully developed at time of contracting, and that the bidder has all required information, clarifications, and addendum to perform the work in conformance with the intent of the documents whether directly indicated or implied.

Existing Conditions and Site Investigation

Each bidder must acquaint himself thoroughly as to the character and nature of the work to be done. Each bidder furthermore must make a careful examination of the site of the work and inform himself fully as to the difficulties to be encountered in the performance of the work, the facilities for delivering, storing, and placing materials and equipment, and other conditions relating to construction and labor including, but not limited to, work by other contractors on the project site, local weather conditions and projections, temporary facilities, location of parking and laydown, etc.

No plea of ignorance of conditions that exist or may hereafter exist on the site of the work, or difficulties that may be encountered in the execution of the work, as a result of failure to make necessary investigations and examinations, will be accepted as an excuse for any failure or omission on the part of the successful bidder to fulfill in every detail all the requirements of the contract documents and to complete the work or the consideration set forth therein, or as a basis for any claim whatsoever.

Insofar as possible, the successful bidder, in carrying out his work, must employ such methods or means as will not cause interruption of or interference with the work of the Construction Manager or any separate contractor.

Temporary On-Site Facilities

The following on-site facilities will be provided by the Construction Manager for use by this subcontractor during the execution of their work unless noted otherwise:

1. Temporary sanitary facilities- the Construction Manager shall provide sufficient toilet facilities in a clean a sanitary condition for use by subcontractors.

2. Dumpsters and bins for recycling and construction waste- Construction Manager shall provide suitable dumpsters for all trades, unless specifically noted otherwise in exhibit b. Subcontractors are responsible for separation of waste into appropriate bins. Failure to separate waste may result in tipping or sorting fees being charged against the subcontract.
3. Fire extinguishers- the Construction Manager shall provide fire extinguishers except for cutting, welding, and hot work during construction. Each subcontractor shall equip their employees with fire extinguishers for all cutting, welding, and hot work operations.
4. The following onsite facilities will **not** be provided by the Construction Manager and is the responsibility of the subcontractor.
5. Temporary office facilities- subcontractor shall make provisions to supply temporary office facilities if deemed necessary for the completion of their scope. Location of office trailer to be established by Construction Manager. Temporary power, water, or sanitary service to the subcontractor's temporary office shall be the responsibility of the subcontractor. The Construction Manager reserves the right to require the office trailer to be relocated or removed as needed to facilitate the progress of the project.
6. Temporary storage containers- subcontractor shall include all necessary storage containers or other facilities needed to securely store materials on the project site. No storage of more than 1 week' worth of material is to be stored in the building if permitted by monteith superintendent. Subcontractor to provide all necessary security to prevent theft of materials stored onsite. In the event of theft, the subcontractor shall immediately replace missing quantities of materials at no cost to the owner or Construction Manager unless otherwise agreed upon.

Temporary On-Site Utilities

Temporary water to a single location shall be provided by Construction Manager. The subcontractor is responsible for all hoses or water tanks required for conveyance of water to the work area.

Temporary heating and ventilation: temporary heating and ventilation will be provided by the Construction Manager, and it is the responsibility of the subcontractor to provide where necessary to complete the work or to protect the work from damage.

Temporary Power and Lighting

Temporary power will be available at no cost to subcontractors.

Once available, temporary lighting in accordance with OSHA standards will be provided by the electrical contractor. This subcontractor shall provide appropriate task lighting as required for completion of the scope.

Once available, 110-volt, single phase power shall be provided throughout the building with GFCI protected receptacles for small tools only, unless specifically noted otherwise in exhibit b. Temporary power locations to be positioned such that all areas of the building can be accessed with a 100' extension cord. Extension cords, lights, stands, hangers, etc. As required for conveyance of power beyond temporary outlets to the work area is by this subcontractor.

This subcontractor shall provide its own GCFI protected outlets, whips, or plugs for permanent outlets once temporary power is removed from building.

The subcontractor shall be responsible for stringing its own cords from available outlets to the work area and must be always kept clear of egress paths.

Engineering, Surveying, and Utility Locates

Each bidder must include in his proposal all costs for engineering, surveying, x-raying of floors, and field measurements, which will be required to complete his work.

Engineering services: where required per contract documents, this subcontractor is to hire a licensed engineer or an otherwise certified technician (where applicable) for the engineering of required components or systems. All engineering costs associated with preparation of shop drawings, submittals, field investigation, inspections, etc. By subcontractor retained engineer is the responsibility of the subcontractor.

Surveying and layout required for the scope of work described herein is by this subcontract. Construction Manager will provide one vertical and one horizontal control point and one (1) benchmark for use by a licensed surveyor retained by the subcontractor. If surveyed points for installation of this scope of work differ from the existing conditions of the site, notify the Construction Manager immediately.

Subcontractor is responsible for calling for, scheduling, and documenting all utility locates (both public and private) prior to excavation. Ensure all existing utilities are located sufficiently prior to excavation. Where utilities cross proposed excavation, pothole and expose all existing utilities prior to excavation.

Permits and Inspections

Each bidder shall include all costs for permits from all jurisdictions, departments, etc. As required for the completion of their scope, with the exception of a building permit which is provided by the owner. Subcontractor is responsible for all applicable permits, business licenses, taxes, fee, etc.

Plumbing, mechanical, electrical, fire alarm, and any subcontractor with a permit is responsible for all inspections related their scope of work and any corrections required.

Subcontractor to ensure proper, competent, and authorized personnel are on site to actively participate during fire marshal and other inspections.

Supervision and Labor

Subcontractor shall account for a sufficient number of skilled workers, technicians, general laborers, and other specialty tradesmen to perform the contracted scope of work within the prescribed schedule requirements. The subcontractor attests that it is in full compliance with I-9 employer verification requirements and will continue to remain in compliance throughout the course of the project.

Supervision by the Subcontractor

The subcontractor shall directly employ and provide a minimum of one competent person by OSHA standards as full-time supervision while completing the scope of the work. This supervisor shall have the authority to make manpower and cost decisions in administering

the subcontractor on behalf of the subcontractor. The supervisory personnel shall be onsite anytime the subcontractor or lower tier subcontractors are working onsite, and cannot be changed without the Construction Manager's consent and approval.

Prior to the commencement of work, subcontractors shall arrange for all site personnel, including lower tier subcontractors, to complete the Construction Manager's project specific safety orientation program.

Removal of Subcontractors Personnel

The Construction Manager reserves the right to require removal and replacement of the subcontractors supervisory or labor personnel in the event that the employee is incompetent, in violation of safety or decorum policies set forth by Monteith or the owner, or are otherwise deemed unfit to execute the work. Upon written notification from the Construction Manager, the subcontractor shall remove the individual or individuals and replaced at the subcontractor's cost.

Subcontractor understands that the project consists of multiple work areas, floors, and phases which will require multiple crews working simultaneously in separate areas. The subcontractor further acknowledges that separate crews, supervision, scaffolding, equipment, material deliveries, shop drawings, inspections, etc. May be required to maintain the project schedule and that all costs associated are included.

Overtime and Weekend Work

The subcontractor shall provide sufficient manpower to meet the project schedule while working from Monday through Friday for 8 hours per day during regular work hours (7 am – 5:30 pm, Monday to Friday). In the event of the need for recovery due to inadequate manpower, weather events, or other delays during a normal work week, the Construction Manager at its sole discretion, can require the subcontractor to work overtime or during the weekend to maintain the project schedule at no additional cost to the Construction Manager. The subcontractor shall make appropriate adjustments to manpower during the normal work week to avoid overtime and weekend work.

When work is required outside of normal hours in order to meet schedule and/or project requirements. The subcontractor is responsible for providing accurate off-hour notifications and request for coordination. All work required outside of normal working hours must be coordinated with Monteith Superintendent at least 48 hours in advance.

Housekeeping

Maintenance of a clean and orderly project site is critical to the efficiency of tradesmen, timely execution of the work, and a safe working environment. As such, the subcontractor shall clean up and remove all debris, waste, cartons, pallets, etc. From the project area to designated bins on a continuous basis.

Materials stored onsite shall be limited to a mutually agreed upon supply. All on-site storage must be coordinated with Monteith Superintendent. The cost of any off-site storage required to perform the work is included in this subcontract. All materials stored onsite must be neatly palletized and/or contained in rolling bins for containment and ease of handling in locations designated by the Construction Manager. Unless specifically

approved by the superintendent, the subcontractor shall plan deliveries such that a maximum of one week of materials are stored onsite during a given period.

Prior to release of final payment, at a time designated by the Construction Manager, the subcontractor shall perform a final clean to remove all residues, dirt, or other contaminants from all materials installed as part of the scope of the work. Final cleaning also includes any overspray or impacts to adjacent materials, removal of any remaining materials, and cleanup of laydown areas.

The Construction Manager reserves the right to supplement the subcontractor's failure to complete clean up as specified herein upon 24-hour written notice to subcontractors. If debris cannot be directly associated with a subcontractor, the Construction Manager will prorate the cost of cleaning from all subcontractors working in the affected areas where cleaning was performed.

Article 3- Changes in Work

Subcontract Adjustments and Change Orders

The contractor and owner may request that the subcontractor implement a change to the contracted documents. If a change is requested that affects the cost of work or time for completion of the work, a change order request may be submitted by the subcontractor for review by the Construction Manager, owner, and designers as outlined in below sections. The subcontractor shall not be entitled to a change order or contract adjustment if the subcontractor proceeds with the work without a fully executed change order unless specifically directed to proceed through a change directive from the contractor.

Requests for Proposals

The Construction Manager, designer, or owner are the only parties from which a request for proposal shall be considered by the subcontractor as a change. In the event that a request for proposal is sent, in writing, to the subcontractor, the subcontractor shall provide pricing or schedule impact for the change no later than 7 days of issuance, change documents or change initiating event. Notice of Cost or schedule impact must be received within 3 days of issuance, change documents or change initiating event.

In submission of change order proposals, the following requirements apply:

1. The subcontractor shall submit change order proposals in a form approved by the Construction Manager or on change proposal forms required by the owner.
2. The form of submission shall include all applicable markups as separate line items calculated in addition to the cost of the work.
3. Proposals must include detailed description of change in scope, material, labor, and associated markups.

The subcontractor shall supply the Construction Manager with appropriate documentation to support the direct cost of the work performed. This may include subcontractor's payroll records for each employee, quotes and estimates provided from suppliers and lower tier subcontractors, material take offs, or any other information required for Construction Manager and owner to understand and quantify the direct of the of the work.

Allowable mark up: the subcontractor shall indicate labor burden, overhead and profit, bond cost, insurance, taxes, etc. on the change order proposal. Per the contract between the contractor and the owner:

For Subcontractors: For additional Work ordered which shall be executed by subcontractors, Subcontractors shall charge not more than eight percent (%) mark-up for overhead and profit combined for Work performed by its own forces not involving Sub-subcontractors, and not more than four percent (4%) markup for overhead and profit combined for Work performed in conjunction with Sub-subcontractors of any tier or level.

For Sub-subcontractors: For additional Work ordered which shall be executed by Sub-subcontractors of any tier or level, Sub-subcontractors may charge not more than four percent (4%) mark-up for overhead and profit combined for Work performed by its own forces including any lower-tiered sub-subcontractors. The Sub-subcontractor shall provide a credit to the Owner of four percent (4%) for overhead and profit combined for any changes which results in a net reduction in the Cost of the Work. In accordance with the Contract Documents, Sub-subcontractor costs included within changes authorized by the Owner shall be based on actual allowable costs and are subject to the audit provisions of the Contract Documents.

Assumption of Intent

The subcontractor acknowledges that the contract documents may be incomplete, contain inconsistencies, and otherwise require the bidder to assume the intent of the documents for a complete system or finished appearance. The subcontractor agrees it has had the opportunity to review the documents and clarify any inconsistencies or questions during the pre-bid RFI process, and that upon submission of the bid, it fully understood and included the required scope to meet the intent of the documents whether clearly indicated or assumed. As such, by entering into the subcontractor agreement, the subcontractor warrants that a complete scope of work will be provided to the satisfaction of the owner and Construction Manager without cause for claim of additional cost or change orders except where changes are specifically requested from the owner, architect, or Construction Manager.

Work Authorization Ticket

The Construction Manager may require that work be completed, for which the subcontractor feels the cost associated is outside of the subcontract agreement. In cases of potential schedule impacts or risk to safety, the superintendent can direct the subcontractor to perform the work with a work authorization ticket. The subcontractor, if directed to proceed through this method, shall provide a daily report of man hours that were directly associated with the work. The superintendent's signature attests that the documented number of manhours is accurate as it relates to the work in question. The project manager shall make final determination as to whether the work constitutes a change to the subcontract agreement.

Escalations

Each bidder should include material and labor price protection throughout the duration of the project. Subcontractors are responsible for carrying adequate monies to cover escalation over the entire project duration. If material escalations are scheduled or likely to impact material prices, the subcontractor should notify the Construction Manager as soon

as possible. The Construction Manager shall make a good faith effort to expedite review and release of materials or review comparable equal products to those experiencing escalations but makes no claim to responsibility for the cost of escalations of material or labor prices, which are to be carried in the base bid.

Article 4- Project Administration

Project Related Meetings

The subcontractor and their supervisory personnel shall attend all required onsite meetings including weekly trades meetings (while working onsite), preinstallation meetings, safety stand downs and toolbox talks, quality control meetings, scheduling, etc. as directed by the Construction Manager. Attendance in meetings is mandatory.

Lean Construction Practices

The Construction Manager will be implementing lean construction practices in the execution of the project. The subcontractor will be required to collaborate effectively in all pull meetings, 6-week work planning meetings, weekly planning meetings, and daily huddles.

Schedule

Construction Management Software

All subcontractors will be required to utilize Procore throughout the course of construction for document management on this project. Access will be provided by the Construction Manager to all subcontractors and employees of subcontractors or lower tier subcontractors. All submittals, RFIs, drawings, observations, punch lists, closeout documents, and warranties shall be submitted through the Procore platform. The Construction Manager shall make available relevant training as needed for subcontractors for proper use of Procore. At a minimum, one (1) field personnel, such as subcontractor site foreman/superintendent, must have the Procore application easily accessible on their phone or tablet.

Submittals, Shop Drawings, and Closeout Requirements

Time is of the essence for this project and as such, submittals and shop drawings shall be submitted as expeditiously as possible. Submittals, shop drawings, and color samples must be submitted no later than 10 days after contract sent by Monteith to subcontractor via DocuSign unless otherwise noted.

The subcontractor shall thoroughly review the project specifications in review of all submittals and provide each submittal, broken out as defined by the Construction Manager, with a monteith's submittal review cover sheet. Each submittal package should clearly identify the specification section relating to the submitted materials.

The subcontractor, a precedent to final payment or progress billings on close out schedule of values, shall submit all O&M manuals to the Construction Manager. O&M manuals must be submitted by the earlier option: within 60 days of approved submittals or 80%

completion of contracts scope of work. Closeout documents should be prepared as soon as submittals are returned as approved by designer.

Attic stock shall be delivered, where required by contract documents, at the completion of the project in clean, unopened, clearly labeled containers to a location designated by the Construction Manager. Transmittals shall be signed indicating all materials provided by the Construction Manager and subcontractor.

As-Builts and Redline Drawings

The subcontractor is responsible for keeping up to date a set of redline as-built drawings on the project site. As-builts are to be marked up on a digital master file each month. All as-built are to be provided per local, state, and federal requirements and as outlined in the project specifications. Completion of monthly as-built updates is a requirement for progress payment as specified by the owner contract. Final as-builts are required for completion of close out document requirements and to be submitted with three (3) days of scope completion and prior to final billing. Three (3) hard copies of the final as-builts shall be provided to the Construction Manager. If surveyed as-builts are required per the contract documents, surveys shall be provided to the Construction Manager in printed, pdf, and cad files.

Applications for Payment

Monthly payment applications shall be prepared and submitted by the subcontractor for current work in place and materials stored on site by the 20th of each month for a period from the 20th of the previous month to the 20th of the current month.

Prior to first billing on the project, a schedule of values shall be submitted and approved by the Construction Manager. The approved schedule of values shall not be modified without an executed change order. Schedule of values must include line items for safety, clean-up, and closeout with scheduled amounts in proportion to contract value.

Schedule of values are required to have the following:

- Submittals – to be paid upon 100% completion of all submittals for this scope of work.
- Safety- to be progressed as approved by Construction Manager based on actual completion
- Mockups- to be paid as a lump sum upon approval of mockups
- Clean up- to be progressed as approved by Construction Manager based on actual completion
- Closeouts- to be paid as a lump sum upon completion of all closeout documents
- Attic stock/as-builts- to be paid as a lump sum upon receipt and approval of attic stock and as-builts.
- Punchlist- value of no less than 2% of contract value for contracts under \$2,000,000 and no less than 1% for contracts above \$2,000,000 to be paid as a lump sum at completion of acceptable punch list activities.

All payment applications shall be submitted no later than the 20th of each month with all required documentation. All submissions shall be made through Monteith's Viewpoint subcontractor kiosk. The accounting representative for each subcontractor shall be given access to the subcontractor kiosk at no cost to the subcontractor. All payment applications shall include a detailed schedule of values including breakout by labor, material types locations, etc.

The Construction Manager reserves the right to require additional documentation as a condition of progress payments as required to ensure the subcontractor is fulfilling their financial obligations to suppliers and lower tier subcontractors including but not limited to: supplier listing statements, lower tier partial lien waivers, joint check agreements, supplier inquiries by Monteith, or other measures as deemed necessary, and at the sole discretion of the Construction Manager.

EXHIBIT B – BID PACKAGES

Bid Package – #01A – General Trade

Description of Work

In general, this Bid Package is comprehensive to specific CSI Division Work and related Work as referenced, indicated on, or implied by the Project Drawings, Specifications and Project Manual. Subcontractor acknowledges that the following Scope of Work detail is provided as a complementary document and must be used in conjunction with **all** Project Documents. Scope of Work listed is not intended to describe a complete and final work scope. It is provided as a summary overview only.

The scope of the work is identified in the following Specification(s) and further described below:

Specification	Description
Division 00	Procurement and Contracting Requirements
Division 01	General Requirements

Scope of Work Summary/Inclusions:

It is understood and agreed that this **General Trade** package includes all inclusions as described in the following subparagraphs regardless of whether or not they are included in the above specifications or any other specification section or shown on the plans:

Trade Specific Requirements:

1. Provide one English speaking supervisor/working foreman and four (4) laborers for a period of 80 weeks with 40 hours per individual per week. These individuals are to be direct employees of this subcontractor. Crew will be responsible for providing continuous clean-up of the project site, building, material laydown areas, office trailer, coordination of temporary facilities such as dumpsters pick-up, portable toilet utilization, safety, and coordination of material deliveries.
2. Include final cleaning services for the building at each phase completion of construction. This is to include cleaning all horizontal surfaces, floor cleaning, window cleaning, roof cleaning, full bathroom cleaning, removal of adhesive residues, minor paint residues, cleaning stainless surfaces, cleaning of all lighting fixtures, carpet cleaning, tile grout cleaning as required, etc. Final cleaning and pressure washing of all asphalt and concrete surfaces. Any equipment and or tools needed is the responsibility of subcontractor.
3. Maintain all laydown yards and construction trailer site. Includes cleaning area of debris and trash, weed eating, and grass cutting. Any required brooms, shovels, trash bags, and/or cans, weed eaters, lawn mowers, and fuel is the responsibility of the subcontractor.
4. Subcontractor shall include relocating porta johns to phased work areas as directed by the CM.
5. This subcontractor is to provide an hourly rate for all required personnel within 7 days of being notified as the apparent low bidder. Monteith reserves the right to require

additional or reduced manpower based on project requirements. The subcontract will be adjusted to reflect the actual cost of work based on actual work hours utilized in accordance with agreed upon unit rates. This subcontractor shall submit weekly time sheets for signature by Monteith employees and shall bill labor utilization monthly based on signed timesheets and agreed upon unit rates.

6. Monteith reserves the right to require replacement of employees if work product is deemed insufficient by Monteith Superintendent.

7. Maintain all construction waste and recycling dumpsters including metal recycling, wood recycling, cardboard recycling, concrete recycling, and General construction debris. This subcontractor is responsible for the enforcement of material sorting to appropriate containers and calling for haul off as required. Cost of dumpster rental, haul off, and tipping fees are by Monteith. Waste contamination charges will be applied as deductive change orders against this contract.

8. Subcontractor shall include maintenance of construction fencing and screening as directed by the CM, this is to include removing and replacing wind screen prior and after any high wind events, replacing any damaged or torn wind screening per direction of the CM.

9. This subcontractor shall provide continuous rental of one working street sweeper with a water tank for a period of no less than 80 weeks. The street sweeper will be used multiple times on a daily basis to maintain the occupied streets and roads around the airport. Includes fuel, water, cleaning solutions, and maintenance for the equipment.

10. This subcontractor shall provide continuous rental of one 3500lb Lull with a garbage hopper for a period of no less than 52 weeks. Includes fuel, and maintenance for the equipment.

11. Include final cleaning services upon completion of each phase of road and parking lot construction. Final cleaning and pressure washing of all asphalt and concrete surfaces. Any equipment and or tools needed is the responsibility of this subcontractor.

12. This subcontractor shall equip their staff with basic hand, power tools, and cell phones. General power tools include, but not be limited to, circular saws and blades, drills, drill bits, extension cords, hammer drills, extension cords, etc. Basic tools are not to be applied to misc. tools and supplies allowances.

13. Subcontractor shall provide and maintain all safety railings, kick boards, toe boards, floor opening coverings, etc. as required per OSHA guidelines and Monteith Construction Safety Manual.

14. Subcontractor shall provide, install, and remove the following floor protective coverings as directed by the Construction Manager:

i. 10 mil plastic sheeting and Masonite coverboard on all corridors, lobbies, and all terrazzo floor finishes. Tape all seams and repair or replace as required.

ii. Builder paper (ram board plus or x board) in all rooms. Tape all seams and repair or replace as required

15. Subcontractor shall be responsible for plastic coverings as required for temporary enclosures, protection of installed finishes, etc.
16. Subcontractor shall be responsible for removal of safety cables installed by steel contractor including removal of posts, screening, and rails.
17. Subcontractor shall be responsible for Temporary fence and gates per logistics plan.
Include for relocating per phasing and maintenance. Fence to be 6' tall chain-link fence with top rail, all posts to be driven into ground. Install and maintain fence screening.
18. Subcontractor shall be responsible for temporary construction barrier for pedestrian traffic
19. Phase 3 – PP-103. These barriers are to be water filled jersey barriers, include for installation, water fill , removal , relocation and rental.
20. Subcontractor shall be responsible for power washing existing foundation retaining wall.
21. Volume 2 drawing S105 between column lines G3 to J.7
Subcontractor shall be responsible for power washing all levels of parking deck upon parking deck completion.
22. Subcontractor to include wash station for trucks. Include temporary hydrant water meter and 100 lf of hose to wash station.
23. **Include \$60,000 allowance for building enclosures and safety materials, cleaning supplies, and temporary signage.**

Scope Specific Safety Requirements:

1. Subcontractor is responsible for providing proper PPE (personal protective equipment) to all onsite worker including but not limited to hard hat, safety vests, eye protection, and safety boots.
2. Subcontractor is responsible for flagging and traffic control including but not limited to temporary road barriers, traffic partitions, cones, signals, signage, etc.
3. Subcontractor is responsible for all unloading & hoisting of their material, equipment, etc. required on this project.
4. Subcontractor to coordinate site parking with Monteith Superintendent at least 48 hours prior to mobilizing.
5. Subcontractor to coordinate site laydown with Monteith Superintendent at least 48 hours prior to mobilizing.
6. Subcontractor to provide dust containment during tie-in construction activities at existing building.
7. Subcontractor to provide dust suppression as required to not impact the airport or passengers.

Schedule Requirements:

TIME IS OF THE ESSENCE

Due to the nature of the project and the extreme cost of delayed delivery of the project, every effort shall be made by the Subcontractor to meet or improve upon the scheduled durations and dates provided below. The subcontractor shall contract with material suppliers, manufacturers, or vendors that have adequate capacity to supply materials or labor as required per schedule. Additionally, the subcontractor has included, in their base bid, sufficient manpower to achieve the schedule and concurrent workflows as required to complete the project on, or ahead of, schedule.

Allowances and Unit Prices:

Lump sum and quantity allowances, when included, are to be utilized only when authorized, in writing, by the Construction Manager. Allowances are in addition to the requirements stated in this bid package or contract documents and are not to be used for costs associated with the required scope of work. All allowances are to be carried in the base bid.

Lump Sum Allowances:

Lump Sum Allowances are those listed herein with fixed dollar amounts and are representative of the direct cost of the work performed. As such, overhead and profit is included in the base contract. In the event that a lump sum allowance is not utilized in full, applicable markups will be deducted from the remaining contract amount. Should the fixed dollar amount allowance be exceeded in the execution of the work as directed by Monteith, the subcontract will be increased by the direct cost of work plus overhead and profit as outlined in the General Conditions of the Contract. Utilization of a lump sum allowance is based on established unit rates, or on a time and material basis where Unit Prices are not specified.

Quantity Allowances:

Quantity allowances, when included, are to be carried at the quantity specified and a unit rate provided for each distinct unit requested in addition to the quantities required per contract documents. Reconciliation of quantity allowances will be based on agreed upon unit rates. All unutilized allowances will be deducted from the subcontract amount at the completion of this Scope of Work. The Unit Price may also be used to increase the contract sum as required or authorized by Monteith. Unit prices shall include all costs, benefits, overhead and fees. Total cost of quantity allowances are to be stated on bid forms.

A summary of allowances are as follows:

Lump Sum Allowances:

1. N/A

Quantity Allowances:

1. N/A

Alternates:

Alternates listed in the bid documents shall be carefully reviewed for impacts to the scope of this bid package. Alternate Prices shall include all costs associated with the changes, omissions, additions, or other adjustments to the work of the Bid Package as described in the alternate, or are

reasonably inferable there from. Claims for extras resulting from changes caused by the acceptance or rejection of any alternate will not be allowed. Alternate Prices shall also include all cost of overhead, profit, and bond premiums associated with the work of the Alternate whether additive or deductive. The Drawings, Specifications, Project Manual, Addendum(s), and other Contract Documents shall be considered appropriately modified by either the acceptance or rejection of the various Alternatives. The Construction Manager and Owner expressly reserve the right to accept or reject any, or all, Alternate Prices and in any sequence. Acceptance or rejection of any alternate does not relieve the Bidder of timely completion of the Work within the time periods indicated.

Add Alternate No. 1 – See Drawings Volume 2 Alternate No. 1
All work to rooms 115,116, 117,118,125

Add Alternate No. 2 – See Drawings Volume 2 Alternate No. 2
All work to rooms 110,125,109,119,120,121,122

Deduct Alternate No. 3 – See Drawings Volume 2 Alternate No. 3
Revise layout of entry canopy.

Deduct Alternate No. 4 – See Drawings Volume 2 Alternate No. 4
Delete all work to Connector 112, Atrium 111, Elevator 1 and 2,
Mechanical Room 124, Storage 123

Bid Package – #02A –Demolition

Description of Work

In general, this Bid Package is comprehensive to specific CSI Division Work and related Work as referenced, indicated on, or implied by the Project Drawings, Specifications and Project Manual. Subcontractor acknowledges that the following Scope of Work detail is provided as a complementary document and must be used in conjunction with all Project Documents. Scope of Work listed is not intended to describe a complete and final work scope. It is provided as a summary overview only.

The scope of the work is identified in the following Specification(s) and further described below:

Specification	Description
Division 00 (All)	Procurement and Contracting Requirements
Division 01 (All)	General Requirements
Section 02 41 16	Structural Demolition
Section 02 41 19	Selective Demolition

Scope of Work Summary/Inclusions:

It is understood and agreed that this **Structural Demolition** package includes all inclusions as described in the following subparagraphs regardless of whether or not they are included in the above specifications or any other specification section or shown on the plans:

Trade Specific Requirements:

1. Structural demolition includes the following areas:
 - a. Removal of canopies as shown
 - b. Removal of support columns/foundations as shown
 - c. Removal of brick façade as shown
 - d. Demolition of existing windows/doors as shown
 - e. Demolition of existing ceilings as shown
 - f. Demolition of existing walls as shown
 - g. Demolition of existing building steel as shown
 - h. Demolition of existing concrete roof as shown
 - i. Demo of existing sidewalks, flag poles and foundations
2. Includes all labor, equipment, materials and other necessary items to complete this scope of work in accordance with the project documents.
3. Supply and maintain dust control measures during demo of the brick walls and concrete.
4. It is understood by this Subcontractor that multiple mobilizations will be required to perform this scope of work and that all costs to perform the work in accordance with the Project Schedule are included.
 - i. Early demo of canopy/foundations at Terminal Departure.
5. Include an allowance of \$100,000 for Temporary shoring of columns on Line 10 & G, K
6. Supply and install any additional shoring needed to perform a safe and orderly demo of the existing walls.
7. Mechanical, Electrical, Plumbing, and Fire Suppression by others.

8. This subcontractor shall return site conditions to the same condition it was turned over to this Subcontractor ; clean of any materials demolished from area.
9. Salvage items include but not limited to doors, door hardware, windows, cabinets, mirrors, chalkboards, tackboards, marker boards and plumbing fixtures.
10. This subcontractor must follow Monteith Construction's Waste Management Policy.
11. Note Volume 2 drawing AD102 detail D1 note D8 – cutting concrete wall will be by concrete trade. Do not include in Demolition.
12. Volume 2 drawing AD102 detail A1 – upon removal of doors provide 1” plywood to enclose opening secured to existing block.
13. Include all disposal costs in bid. New Hanover County does not charge tipping fees to ILM project.
14. Protect all finished areas during demolition.

Scope Specific Safety Requirements:

1. This Subcontractor is fully responsible and accountable for safely performing this Bid Package scope of work. The following items are typical safety requirements that shall be included in the scope of work, but are not intended to exclude any safety related item that may be required: personal protective equipment, traffic control, material handling and equipment safety, hazardous material safety, etc.
2. Subcontractors and their lower tier subcontractors will be required to comply with Temporary Facilities and Controls, all applicable OSHA standards, and other local, state, and federal regulations. The more stringent of these will apply.
3. This Subcontractor is fully responsible and accountable for safely performing this Bid Packages scope of work. The following items are typical safety requirements that shall be included in the scope of work but are not intended to exclude any safety related item that may be required: personal protective equipment, fall arrest systems, fall protection barricades, scaffolding and ladder safety, electrical safety, hoist way and machine room safety, material handling and equipment safety, etc. and other required safety provisions.
4. Supply and maintain dust control measures during demo of the brick walls.
5. All workers must be compliant at all time with MCC safety standard for use of PPE while on the job site.
6. In the event scaffolding is used, the erection, dismantling, access and use are to be in full compliance with OSHA standards. The scaffolding used is to be maintained to OSHA standards throughout its use on the project, including but not limited to OSHA tags, daily inspections, etc.

Schedule Requirements:

TIME IS OF THE ESSENCE

Due to the nature of the project and the extreme cost of delayed delivery of the project, every effort shall be made by the Subcontractor to meet or improve upon the scheduled durations and dates provided below. The subcontractor shall contract with material suppliers, manufacturers, or vendors that have adequate capacity to supply materials or labor as required per schedule. Additionally, the subcontractor has included, in their base bid, sufficient manpower to achieve the schedule dates and concurrent workflows as required to complete the project on, or ahead of, schedule.

Allowances and Unit Prices:

Lump sum and quantity allowances, when included, are to be utilized only when authorized, in writing, by the Construction Manager. Allowances are in addition to the requirements stated in this bid package or contract documents and are not to be used for costs associated with the required scope of work. All allowances are to be carried in the base bid.

Lump Sum Allowances:

Lump Sum Allowances are those listed herein with fixed dollar amounts and are representative of the direct cost of the work performed. As such, overhead and profit is included in the base contract. In the event that a lump sum allowance is not utilized in full, applicable markups will be deducted from the remaining contract amount. Should the fixed dollar amount allowance be exceeded in the execution of the work as directed by Monteith, the subcontract will be increased by the direct cost of work plus overhead and profit as outlined in the General Conditions of the Contract. Utilization of a lump sum allowance is based on established unit rates, or on a time and material basis where Unit Prices are not specified.

Quantity Allowances:

Quantity allowances, when included, are to be carried at the quantity specified and a unit rate provided for each distinct unit requested in addition to the quantities required per contract documents. Reconciliation of quantity allowances will be based on agreed upon unit rates. All unutilized allowances will be deducted from the subcontract amount at the completion of this Scope of Work. The Unit Price may also be used to increase the contract sum as required or authorized by Monteith. Unit prices shall include all costs, benefits, overhead and fees. Total cost of quantity allowances are to be stated on bid forms.

A summary of allowances are as follows:

Lump Sum Allowances:

1. Include an allowance of \$100,000 for Temporary shoring of columns on Line 10 & G, K

Quantity Allowances:

1. N/A

Alternates:

Alternates listed in the bid documents shall be carefully reviewed for impacts to the scope of this bid package. Alternate Prices shall include all costs associated with the changes, omissions, additions, or other adjustments to the work of the Bid Package as described in the alternate, or are reasonably inferable there from. Claims for extras resulting from changes caused by the acceptance or rejection of any alternate will not be allowed. Alternate Prices shall also include all cost of overhead, profit, and bond premiums associated with the work of the Alternate whether additive or deductive. The Drawings, Specifications, Project Manual, Addendum(s), and other

Contract Documents shall be considered appropriately modified by either the acceptance or rejection of the various Alternatives. The Construction Manager and Owner expressly reserve the right to accept or reject any, or all, Alternate Prices and in any sequence. Acceptance or rejection of any alternate does not relieve the Bidder of timely completion of the Work within the time periods indicated.

Add Alternate No. 1 (Locker Room) – See Drawings Volume 2 Alternate No. 1

All work to rooms 115,116, 117,118

Add Alternate No. 2 (History Corridor)– See Drawings Volume 2 Alternate No. 2

All work to rooms 109, 110,119,120,121,122, Corridor Outside of Locker Rooms

Deduct Alternate No. 3 (Drop Off Canopy Reduction) – See Drawings Volume 2 Alternate No. 3

Revise layout of entry canopy.

Deduct Alternate No. 4 (Delete Tunnel) – See Drawings Volume 2 Alternate No. 4

Delete all work to Connector 112, Atrium 111, Elevator 1 and 2,
Mechanical Room 124, Storage 123

Bid Package – #03A – Cast-In-Place Concrete

Description of Work

In general, this Bid Package is comprehensive to specific CSI Division Work and related Work as referenced, indicated on, or implied by the Project Drawings, Specifications and Project Manual. Subcontractor acknowledges that the following Scope of Work detail is provided as a complementary document and must be used in conjunction with all Project Documents. Scope of Work listed is not intended to describe a complete and final work scope. It is provided as a summary overview only.

The scope of the work is identified in the following Specification(s) and further described below:

Specification	Description
Division 00 (All)	Procurement and Contracting Requirements
Division 01 (All)	General Requirements
Section 03 11 16	Architectural Concrete Formliners
Section 03 30 00	Cast-In-Place Concrete
Section 07 26 00	Vapor Retarder
Section 07 92 00	Joint Sealants (As Pertains)

Scope of Work Summary/Inclusions:

It is understood and agreed that this **Concrete** package includes all inclusions as described in the following subparagraphs regardless of whether or not they are included in the above specifications or any other specification section or shown on the plans:

Trade Specific Requirements:

1. Includes all labor, equipment, materials, freight, taxes, and supervision required to perform the cast-in-place concrete scope.
2. Includes all concrete materials, any needed admixtures, concrete reinforcement, expansion joint materials, vapor barriers, curing compounds or any other materials required for a complete concrete installation.
3. Includes any formwork as required.
4. Includes all excavation, compaction, and backfill required. It is the responsibility of this contract to haul off any spoils to location onsite per the direction of the CM.
5. Includes all stone subbase for slabs on grade.
6. Includes all layout of concrete scope.
7. Includes all construction and control joints including supply and installation of the joint sealants.
8. Includes concrete wash out containers that can be moved around onsite and hauled off for waste removal as necessary.

9. Prior to construction, if the reinforcing is indicated as embedded in the concrete. Straighten and/or properly align this reinforcing as required for masonry installation and proper fit inside the masonry systems.
10. Include necessary mobilizations and material and equipment (pump, transport, light towers, etc.) locations as required to facilitate construction progress and/or as directed by Construction Manager.
11. Provide dewatering in order to properly maintain and complete the work of this Bid Package.
12. This Subcontractor is responsible for the quality of all work associated with this Bid Package and is responsible for any and all costs associated with any non-conformance with specified requirements.
13. It is understood by this Subcontractor that multiple mobilizations will be required to perform this scope of work and that all costs to perform the work in accordance with the Project Schedule are included.
14. This subcontractor includes Volume 2 drawing S303 detail 4 – all post installed rebar dowels.
15. This subcontractor includes Volume 2 S401 & S303 – install anchor bolts and grouting bases between column line H to J. Include x raying concrete for existing concrete reinforcement placement.
16. This subcontractor includes volume 2 drawing S311 Detail 7 – Concrete beam.
17. This subcontractor includes volume 2 drawing AD102 Note D8. This contractor includes cutting concrete wall opening.
18. This subcontractor to chip auger cast concrete piles to elevation and expose reinforcing for connection.
19. This subcontractor includes concrete and finishing to all metal pan stairs.
20. This subcontractor shall include concrete curb per Volume 1 drawing S510 Detail A2.
21. Note site contractor to include for excavation and backfill to tunnel.
22. Concrete subcontractor to include backfill to parking deck ramps(3) to underside of slab. Include import material and comply with compaction requirements and complete within schedule timeframe.
23. Site contractor to provide grade elevation 85.17' at parking deck and elevation 83.5' at tunnel.
24. This subcontractor includes setting all anchor bolts and grouting all base plates.
25. This contractor includes compressible joint material between precast tunnel and concrete Volume 2 detail S/304.
26. Precast deck washes and topping by precast manufacturer.

27. Concrete contractor to place all surplus soil to designated location on site. Surplus material to be removed offsite by grading contractor.
28. Concrete contractor to include \$ 10,000 delegated design fee for the NCDOT Concrete Barrier Rail per drawing Volume 1 S211 detail C3,4.
29. Include in pricing 15 tons of rebar for the barrier. Include all concrete supply and forming per detail.
30. **This contractor is to include non-shrink grout at precast wall in keyway per detail 8/S.303**
31. **Includes installation only of all pipe bollards and supply and install pipe bollard concrete at the precast parking deck in detail C1/S.502. Pipe bollard supplied by BP 05A – Structural Steel.**

Scope Specific Safety Requirements:

32. This Subcontractor is fully responsible and accountable for safely performing this Bid Package scope of work. The following items are typical safety requirements that shall be included in the scope of work, but are not intended to exclude any safety related item that may be required: personal protective equipment, traffic control, material handling and equipment safety, hazardous material safety, etc.
33. Subcontractors and their lower tier subcontractors will be required to comply with Temporary Facilities and Controls, all applicable OSHA standards, and other local, state, and federal regulations. The more stringent of these will apply.
34. This Subcontractor is fully responsible and accountable for safely performing this Bid Packages scope of work. The following items are typical safety requirements that shall be included in the scope of work, but is not intended to exclude any safety related item that may be required: personal protective equipment, fall arrest systems, fall protection barricades, scaffolding and ladder safety, electrical safety, hoist way and machine room safety, material handling and equipment safety, etc. and other required safety provisions.
35. All scaffolding, erection, dismantling, access and use of scaffolding are to be in full compliance with local and state regulations
36. Provide all traffic control (barricades, fences, flagmen, temporary signage, etc.) as required by the City of Wilmington, FAA, NCDOT, etc. to complete all work under this Bid Package.
37. This Subcontractor is responsible to comply with Monteith Construction Safety Manual. Items include, but are not limited to the follow: New employee training, Weekly toolbox talks, Task specific training, Drug and alcohol screening and Injury management.

Schedule Requirements:

TIME IS OF THE ESSENCE

Due to the nature of the project and the extreme cost of delayed delivery of the project, every effort shall be made by the Subcontractor to meet or improve upon the scheduled durations and dates provided below. The subcontractor shall contract with material suppliers, manufacturers, or vendors that have adequate capacity to supply materials or labor as required per schedule. Additionally, the subcontractor has included, in their base bid, sufficient manpower to achieve the below dates and concurrent workflows as required to complete the project on, or ahead of, schedule.

The below schedule requirements are contractually binding for durations of activities indicated. The dates associated with each activity are subject to change based on coordination with other trades, however durations shall remain constant.

1. *Submittals and Shop Drawings:*
 - Shop Drawings: 4 weeks to submit
 - Drawings Approval: 6 weeks for approval

Allowances and Unit Prices:

Lump sum and quantity allowances, when included, are to be utilized only when authorized, in writing, by the Construction Manager. Allowances are in addition to the requirements stated in this bid package or contract documents and are not to be used for costs associated with the required scope of work. All allowances are to be carried in the base bid.

Lump Sum Allowances:

Lump Sum Allowances are those listed herein with fixed dollar amounts and are representative of the direct cost of the work performed. As such, overhead and profit is included in the base contract. In the event that a lump sum allowance is not utilized in full, applicable markups will be deducted from the remaining contract amount. Should the fixed dollar amount allowance be exceeded in the execution of the work as directed by Monteith, the subcontract will be increased by the direct cost of work plus overhead and profit as outlined in the General Conditions of the Contract. Utilization of a lump sum allowance is based on established unit rates, or on a time and material basis where Unit Prices are not specified.

Quantity Allowances:

Quantity allowances, when included, are to be carried at the quantity specified and a unit rate provided for each distinct unit requested in addition to the quantities required per contract documents. Reconciliation of quantity allowances will be based on agreed upon unit rates. All unutilized allowances will be deducted from the subcontract amount at the completion of this Scope of Work. The Unit Price may also be used to increase the contract sum as required or authorized by Monteith. Unit prices shall include all costs, benefits, overhead and fees. Total cost of quantity allowances are to be stated on bid forms.

A summary of allowances are as follows:

Lump Sum Allowances:

1. Concrete contractor to include \$ 10,000 delegated design fee for the NCDOT Concrete Barrier Rail per drawing Volume 1 S211 detail C3,4.

Quantity Allowances:

1. N/A

Alternates:

Alternates listed in the bid documents shall be carefully reviewed for impacts to the scope of this bid package. Alternate Prices shall include all costs associated with the changes, omissions, additions, or other adjustments to the work of the Bid Package as described in the alternate, or are reasonably inferable there from. Claims for extras resulting from changes caused by the acceptance or rejection of any alternate will not be allowed. Alternate Prices shall also include all cost of overhead, profit, and bond premiums associated with the work of the Alternate whether additive or deductive. The Drawings, Specifications, Project Manual, Addendum(s), and other Contract Documents shall be considered appropriately modified by either the acceptance or rejection of the various Alternatives. The Construction Manager and Owner expressly reserve the right to accept or reject any, or all, Alternate Prices and in any sequence. Acceptance or rejection of any alternate does not relieve the Bidder of timely completion of the Work within the time periods indicated.

Add Alternate No. 1 (Locker Room) – See Drawings Volume 2 Alternate No. 1

All work to rooms 115,116, 117,118

Add Alternate No. 2 (History Corridor)– See Drawings Volume 2 Alternate No. 2

All work to rooms 109, 110,119,120,121,122, Corridor Outside of Locker Rooms

**Deduct Alternate No. 3 (Drop Off Canopy Reduction) – See Drawings Volume 2
Alternate No. 3**

Revise layout of entry canopy.

Deduct Alternate No. 4 (Delete Tunnel) – See Drawings Volume 2 Alternate No. 4

Delete all work to Connector 112, Atrium 111, Elevator 1 and 2,
Mechanical Room 124, Storage 123

Bid Package – #04A – Masonry

Description of Work

In general, this Bid Package is comprehensive to specific CSI Division Work and related Work as referenced, indicated on, or implied by the Project Drawings, Specifications and Project Manual. Subcontractor acknowledges that the following Scope of Work detail is provided as a complementary document and must be used in conjunction with all Project Documents. Scope of Work listed is not intended to describe a complete and final work scope. It is provided as a summary overview only.

The scope of the work is identified in the following Specification(s) and further described below:

Specification	Description
Division 00 (All)	Procurement and Contracting Requirements
Division 01 (All)	General Requirements
04 20 00	Unit Masonry
04 22 00	Concrete Masonry Units
07 21 00	Thermal Insulation
07 27 26	Fluid Applied Membrane Air Barriers
07 92 00	Joint Sealants (As Pertains)
08 11 13	Hollow Metal Doors and Frames (As Pertains)

Scope of Work Summary/Inclusions:

It is understood and agreed that this **Masonry** package includes all inclusions as described in the following subparagraphs regardless of whether or not they are included in the above specifications or any other specification section or shown on the plans:

Trade Specific Requirements:

1. Subcontractor has inspected the site, reviewed the logistics plan, and is familiar with access, sequence, staging, hoisting requirements, and all available documents prior to submitting the bid.
2. All required survey and layout is included.
 - a. Construction manager to provide only benchmarks and control lines
 - b. Subcontractor is responsible for Establishing building corners, wall layout, and footing rebar verification in coordination with concrete subcontractor.
 - c. Subcontractor is responsible for verifying walls are installed plumb and straight. Prior to installation of walls, verify that substrate is plumbs and straight. Notify CM of any discrepancies in installed substrate or steel structure prior to commencing work.
3. Provide all masonry work for a complete installation including, but not limited to the following: concrete masonry units (CMU), face brick, precast concrete, mortar (include colored mortar if required), mortar admixtures, grout, concrete fill, reinforcing steel bars (within masonry CMU cells), rebar positioners, rebar caps, anchors (including seismic, veneer, dovetail, rigid, etc. anchors where required), ties, horizontal joint reinforcing, weeps, vents, control joints, compressible filler strips, expansion joints, through wall flashing, cavity drainage material, mortar net, pointing, cleaning, mock-ups, etc. as may

be required to provide a complete and functional masonry package, whether detailed and/or implied on the Contract Documents

4. Provide and install all cavity insulation behind brick veneer
5. Provide and install all architectural precast concrete including:
 - a. Precast benches, precast site walls, precast planters, precast landscape boarders, precast stair treads and riser, etc.
6. Includes all neoprene joint fillers and self expanding neoprene cavity seals between brick and adjacent materials.
7. Provide full time supervision for project whose sole responsibility is quality control, safety, material ordering, and maintaining a clean and efficient work area.
8. Include additional grouted and reinforced cells in CMU as required for steel installations.
9. Subcontractor to coordinate all grout placements and reinforcement inspections with Monteith Superintendent. All grout placements to be scheduled a minimum of 24 hrs. in advanced. If grout placement is not scheduled with Monteith and inspector is not present at time of grouting, grout placement will not be permitted, and any costs associated will be the responsibility of this subcontractor.
10. Vertical and horizontal steel reinforcing is to be installed per the contract drawings in all masonry walls
11. Provide UL listed head of wall details at all fire rated masonry partitions. Label all fire rated masonry partitions.
12. All top of wall sealants, mineral wool, fillers, draft stops, etc for all CMU walls is the responsibility of this subcontractor.
13. Prior to placement of concrete footings with vertical dowel reinforcement embedded in concrete, coordinate with cast in place subcontractor to verify reinforcement is within masonry cells.
14. Includes installation of miscellaneous steel materials (provided by others) including the following:
 - a. Loose steel lintels,
 - b. Any embedded bearing plates, anchor bolts, plates, in masonry walls.
15. All bolted, welded, or misc. steel not embedded in masonry is supplied and installed by the steel contractor. Coordinate location of bolted steel materials with the steel contractor to ensure adequate anchorage and reinforcement is provided.
16. Includes all infill and grouting of structural steel (bearing blockouts, beam tails, etc) set by structural steel and misc metals contractor within masonry walls.
17. Block-outs, embeds, sleeves for penetrations, openings, attachments, etc. will be furnished by other trades for installation in masonry work by this Subcontractor. Including all permanent and or non-permanent materials required for openings. Masonry subcontractor to coordinate and layout all embeds, anchor bolts, and miscellaneous masonry embedded steel. Elevation and size of penetrations to be written on walls or floors by trade requiring penetration. If penetration/block out is provided and properly coordinated by trade and not installed per coordination all cutting, coring, or rebuilding of wall is the responsibility of masonry subcontractor.
18. Includes installation and grouting of all hollow metal frames as part of this subcontract. Frames are to be installed plumb and level while maintaining integrity of frame opening for installation of doors. Brace, shim, or block frames as required to

maintain opening integrity. Remove all hollow metal frame spreader bars after completion of grouting. Provide insulation to hollow metal frames as indicated.

19. Clean all footings, slabs, brick ledges, and dewater excavations as necessary for installation of masonry work.

20. Provide adequate protection at all floor areas during masonry and grouting operations.

21. Includes all cold weather masonry provisions as required including hot water, temporary heating, enclosures, masonry blankets, sand and water heaters, etc.

22. All work shall be properly covered with plastic sheet goods at the completion of each day or until permanent covering/air barrier has been installed.

23. Provide adequate scaffolding, manpower, equipment, etc. as needed to meet schedule requirements.

24. Grade, level or smooth substrates as required for scaffold installations.

25. Include for patching doors openings Volume 2 drawing A102 detail A1. Include removal of plywood covering each opening.

26. This subcontractor to include for any patching to men's and women's locker room renovation. Volume 2 drawing A102.

27. This subcontractor to include supply, install and engineering of precast sill, flashing per Volume 2 drawing A504 detail A3.

Scope Specific Safety Requirements:

This subcontractor shall provide and install the following safety related materials:

1. Provide rebar caps on all vertical reinforcement
2. Provide ladders to all scaffold platforms and platforms fully decked at all levels

Project Specific Scope of Work Inclusions:

The following is provided as a courtesy and is not intended to fully represent the scope of work required per plans and specifications. Drawing references are intended to be references to similar details relevant to the scope and may not be limited to the details referenced.

1. Provide termination bars and sealant at all flexible thruwall flashing and self adhered membrane transition membrane flashing lapped over termination bar.
2. Install all 2 piece thruwall flashings with snaplock receivers (thruwall flashing provided by others) Coordinate flashing height with roofing or panel installers.
3. Provide vertical reinforcement drilled and epoxied into turndown slab lugs at all interior non load bearing partition walls.
4. Install masonry vents at top of all masonry veneer walls
5. Provide and install all neoprene joint fillers and self-expanding neoprene cavity seals between brick adjacent materials as indicated.

Schedule Requirements:

TIME IS OF THE ESSENCE

Due to the nature of the project and the extreme cost of delayed delivery of the project, every effort shall be made by the Subcontractor to meet or improve upon the scheduled durations and dates provided below. The subcontractor shall contract with material

suppliers, manufacturers, or vendors that have adequate capacity to supply materials or labor as required per schedule. Additionally, the subcontractor has included, in their base bid, sufficient manpower to achieve the below dates and concurrent workflows as required to complete the project on, or ahead of, schedule.

The below schedule requirements are contractually binding for durations of activities indicated. The dates associated with each activity are subject to change based on coordination with other trades, however durations shall remain constant.

1. *Submittals and Shop Drawings:*

- Shop Drawings: 4 weeks

Procurement & Delivery: 8 Weeks post executed Subcontract

Allowances and Unit Prices:

Lump sum and quantity allowances, when included, are to be utilized only when authorized, in writing, by the Construction Manager. Allowances are in addition to the requirements stated in this bid package or contract documents and are not to be used for costs associated with the required scope of work. All allowances are to be carried in the base bid.

Lump Sum Allowances:

Lump Sum Allowances are those listed herein with fixed dollar amounts and are representative of the direct cost of the work performed. As such, overhead and profit is included in the base contract. In the event that a lump sum allowance is not utilized in full, applicable markups will be deducted from the remaining contract amount. Should the fixed dollar amount allowance be exceeded in the execution of the work as directed by Monteith, the subcontract will be increased by the direct cost of work plus overhead and profit as outlined in the General Conditions of the Contract. Utilization of a lump sum allowance is based on established unit rates, or on a time and material basis where Unit Prices are not specified.

Quantity Allowances:

Quantity allowances, when included, are to be carried at the quantity specified and a unit rate provided for each distinct unit requested in addition to the quantities required per contract documents. Reconciliation of quantity allowances will be based on agreed upon unit rates. All unutilized allowances will be deducted from the subcontract amount at the completion of this Scope of Work. The Unit Price may also be used to increase the contract sum as required or authorized by Monteith. Unit prices shall include all costs, benefits, overhead and fees. Total cost of quantity allowances are to be stated on bid forms.

A summary of allowances are as follows:

Lump Sum Allowances:

1. N/A

Quantity Allowances:

1. N/A

Alternates:

Alternates listed in the bid documents shall be carefully reviewed for impacts to the scope of this bid package. Alternate Prices shall include all costs associated with the changes, omissions, additions, or other adjustments to the work of the Bid Package as described in the alternate, or are reasonably inferable there from. Claims for extras resulting from changes caused by the acceptance or rejection of any alternate will not be allowed. Alternate Prices shall also include all cost of overhead, profit, and bond premiums associated with the work of the Alternate whether additive or deductive. The Drawings, Specifications, Project Manual, Addendum(s), and other Contract Documents shall be considered appropriately modified by either the acceptance or rejection of the various Alternatives. The Construction Manager and Owner expressly reserve the right to accept or reject any, or all, Alternate Prices and in any sequence. Acceptance or rejection of any alternate does not relieve the Bidder of timely completion of the Work within the time periods indicated.

Add Alternate No. 1 (Locker Room) – See Drawings Volume 2 Alternate No. 1

All work to rooms 115,116, 117,118

Add Alternate No. 2 (History Corridor)– See Drawings Volume 2 Alternate No. 2

All work to rooms 109, 110,119,120,121,122, Corridor Outside of Locker Rooms

**Deduct Alternate No. 3 (Drop Off Canopy Reduction) – See Drawings Volume 2
Alternate No. 3**

Revise layout of entry canopy.

Deduct Alternate No. 4 (Delete Tunnel) – See Drawings Volume 2 Alternate No. 4

Delete all work to Connector 112, Atrium 111, Elevator 1 and 2,
Mechanical Room 124, Storage 123

Bid Package – #05A – Structural Steel

Description of Work

In general, this Bid Package is comprehensive to specific CSI Division Work and related Work as referenced, indicated on, or implied by the Project Drawings, Specifications and Project Manual. Subcontractor acknowledges that the following Scope of Work detail is provided as a complementary document and must be used in conjunction with all Project Documents. Scope of Work listed is not intended to describe a complete and final work scope. It is provided as a summary overview only.

The scope of the work is identified in the following Specification(s) and further described below:

Specification	Description
Division 00 (All)	Procurement and Contracting Requirement
Division 01 (All)	General Requirements
Section 05 12 00	Structural Steel Framing
Section 05 10 00	Structural Cast Steel Components
Section 05 12 10	Structural Cast Steel Components
Section 05 12 13	Architecturally Exposed Structural Steel Framing
Section 05 31 00	Steel Decking
Section 05 50 00	Metal Fabrications
Section 05 51 13	Metal Pan Stairs
Section 05 52 13	Pipe and Tube Railings
Section 05 73 00	Decorative Metal Railings

Scope of Work Summary/Inclusions:

It is understood and agreed that this **Structural Steel** package includes all inclusions as described in the following subparagraphs regardless of whether or not they are included in the above specifications or any other specification section or shown on the plans:

Trade Specific Requirements:

Subcontractor has inspected the site, reviewed the logistics plan, and is familiar with access, sequence, staging, hoisting requirements, and all available documents prior to submitting the bid.

1. All required survey and layout is included.
2. Construction manager to provide only benchmarks and control lines
3. Subcontractor is responsible for maintaining and certifying building plumb prior to placement of elevated concrete slabs, roofing, grouting of base plates, etc.
4. Erection tolerances shall be based on tolerance requirements for installed finishes.
5. Subcontractor shall employ a licensed surveyor to inspect anchor bolt locations prior to installation of columns. Notify Monteith of any discrepancies that will affect the erection of structural steel. Provide anchor bolt survey to Monteith.

6. Licensed survey plan for all interior stairs furnished and installed in this work package. Include survey points at front and back and side to side of each tread (4 survey points per tread). Survey of pan stairs.
7. Field measurements or verification are required and may require separate mobilizations.
8. This Subcontractor is responsible for providing all equipment needed to erect and install all structural steel and miscellaneous metals work. This equipment includes but is not limited to the following: cranes, forklifts, boom trucks, hoists, welders, scaffolding, shoring, etc.
9. This subcontractor shall provide portable diesel or gas generators and portable welding equipment for the duration of this scope of work. Temporary power facilities will not be provided for use by this subcontractor at any time during erection.
10. This subcontractor shall closely review logistics plan for crane locations and pick distances. Crane pads will be provided by site contractor at locations noted on logistics plans only.
11. Subcontractor responsible for cleaning of all steel at completion of erection.
12. This subcontractor shall make arrangements for crane operation, rigging, and setting of beam during topping out ceremony as requested by Monteith.
13. All steel outside of the wall cavity to be Hot dipped galvanized finish. This includes steel within exterior wall cavities.
14. This Subcontractor shall provide a complete metal stair and railings package that includes but is not limited to the following items: steel pan stairs, landings, handrails, and wall railings for all stairs as required by drawings. Include all core drilling, drilling, epoxy, and other anchoring requirements. The metal stairs, landings, and integral handrails are to be installed as the structural steel work is erected.
15. All exposed brace frames below ceiling and monumental stairs exposed members to be AESS Category 2.
16. Provide all required shop primers, paint, coatings, field touch-up materials and labor.
17. All Structural steel to receive fireproofing shall be left unprimed.
18. This package includes all shops and field welding as required.
19. All bolted or fastened steel materials shall be installed by this contractor unless specifically noted otherwise. Include all fastening materials.
20. Structural steel framing, decking, and misc. metals shall be shipped, unloaded, inventoried, and properly stored on dunnage to keep steel clean by this subcontractor.
21. Provide and install pre-drilled holes in steel, as necessary, for attachment of work by others including holes for wood blocking bolts, nail holes in embeds for anchorage to formwork, etc. Holes to be indicated on shop drawings.

22. This subcontractor is responsible for dewatering of footings as required for the setting of structural steel.
23. Cut deck to fit around openings and projections, including plumbing, HVAC, fire protection, and electrical work and provide closures to prevent concrete overspill. Include reinforcing / structural framing of openings where required. Carefully examine the Architectural, Structural, and Mechanical drawings to determine the size, type and quantity of openings required. It shall be this Subcontractor's responsibility to provide all such holes and/or openings in proper locations.
24. Steel tolerances shall comply with the tolerances of the materials that are being installed and connected to structural steel.
25. Provide safe access by boom lift or other means for the testing agency and EOR to the work of this section. Any work found to be deficient during inspections is to be corrected and reinspected at no cost to the Construction Manager or Owner.
26. Delegated Design Requirements:
 27. Delegated Design is required for structural steel connections and metal stairs. Complete calculations and shop drawings are to be signed and sealed by a Professional Engineer licensed in the State of North Carolina. Reference plans and specifications for additional requirements in addition to below:
 28. Include engineering of all braced frames, collector beams, moment frames and connections, lintel and wind girts, and shear connections.
 29. Shop Drawings to be provided with design loadings and reactions applied to supporting structure. Include a summary of the controlling load cases for each location.
 30. Subcontractor to provide anchor/embed shop drawings within 14 days of post-bid verification meeting. All other shop drawings shall be submitted as sequenced in the schedule and as required to meet the erection schedule.
 31. Deviations, changes, or discrepancies from the contract documents are to be clouded or clearly marked requesting approval or clarification from the EOR and Monteith. Provide and maintain an RFI (REQUEST FOR INFORMATION) log of all required clarifications.
 32. Shop drawings shall clearly indicate all assumed design loads and appropriate locations for EOR approval.
 33. The subcontractor shall provide a 3D steel design model that is compatible with Navisworks for use in MEP coordination.

Scope Specific Safety Requirements:

1. This subcontractor shall provide and install the following safety related materials: Perimeter safety cabling system at all elevated floor levels and roof. Including around perimeter steel edges, stair openings, roof hatch openings, and all openings larger than 2'x2'. Install safety cabling and posts such that it does not interfere with the installation of subsequent scope packages. Maintenance of safety cabling is the responsibility of this

subcontractor for the duration of erection activities. Removal of Safety cabling and posts by others.

2. Furnish, install, and remove all necessary temporary safety brackets, safety cables, and fall protection devices for erection of steel in compliance with OSHA Regulations and Monteith Guidelines.
3. Furnish project specific safety plan to the construction manager including: Hoisting and rigging plans, fall protection plan, job specific erection and bracing plans, safety policies, etc. shall be provided to the Construction Manager prior to starting work.

Project Specific Scope of Work Inclusions:

1. The following is provided as a courtesy and is not intended to fully represent the scope of work required per plans and specifications. Drawing references are intended to be references to similar details relevant to the scope and may not be limited to the details referenced.
2. The following items shall be Furnished and Installed by this subcontractor: Complete structural steel package including, but not limited to, columns, beams, tubes, bent plate, slab edge angles, shear studs, gusset plates, brace frames, all connection details and welding, welded deformed bars, DBA's expansion anchors, shims, leveling nuts, steel decking.
3. Installation of shear studs shall be completed in phases as directed by the Construction Manager and will require multiple mobilizations.
4. Includes all Support frames for openings in structural steel. Opening counts to be coordinated with MEP and architectural sheets. All openings greater than 6" in any direction are to be provided with steel frame supports. Provide pour stop angles at interior edge of openings for all slab on metal deck opening receiving steel frame supports. Opening supports include roof drains.
5. Includes all floor and roof decking- provide closure plates, angles, caps, fillers, pour stops etc. prior to concrete placement.
6. Includes all bolted steel support or shelf angles for support of interior or exterior finishes. Includes all fasteners, expansion anchors, epoxy anchors, and installation. Coordinate elevation with CMAR and contractor whose scope is reliant on steel support.
7. All top of wall bracing
8. All base plate shim materials and leveling nuts
9. Galvanized finish at all steel materials outside of the primary building envelope (air barrier or roof membrane)
10. Includes Elevator hoist beam and rail supports at each elevator. Included all hoist beams as required.
11. Includes all miscellaneous metals to be furnished and installed including:

12. All architectural steel materials noted on A sheets whether or not indicated on structural sheets including wall framing supports, steel casework supports, jamb protection at overhead doors, overhead hung toilet partition supports, etc.
13. All interior metal pan stairs and railings.
14. All interior and exterior Stainless steel and primed handrails and guard rails. Includes installation of all railings including those which are fastened or bolted to walls.
15. All roof anchor davits and permanent fall protection anchors with cabling- Include for certification of fall protection anchors and davits by a certified inspector.
16. Door, window, louver, and miscellaneous opening supports
17. All roof access ladders and stairs.
18. Elevator sump pit frame and grating, elevator pit ladders.
19. Elevator sill angles.
20. Shelf angles and vertical C channel supports.
21. Glazing system head supports
22. Brick shelf angle supports
23. Top of CMU wall bracing
24. Galvanized 2 ½"x 2" angle to support gutter
25. Tube Steel jamb and head support, galvanized jamb closure, and galvanized lintel at overhead door.
26. Prefinished 2" x 4" curved aluminum tube extrusion – Volume 2 drawing A603 detail C1.
27. Provide all loose lintels installed by masonry contractor.
28. Supply and install all misc. steel shown on Architectural drawings.
29. Include Crane Rail per Volume 2 - drawing A550 detail C2.
30. **Includes supply of all pipe bollards at the precast parking deck in detail C1/S.502.**

Schedule Requirements:

TIME IS OF THE ESSENCE

Due to the nature of the project and the extreme cost of delayed delivery of the project, every effort shall be made by the Subcontractor to meet or improve upon the scheduled durations and dates provided below. The subcontractor shall contract with material suppliers, manufacturers, or vendors that have adequate capacity to supply materials or labor as required per schedule. Additionally, the subcontractor has included, in their base

bid, sufficient manpower to achieve the below dates and concurrent workflows as required to complete the project on, or ahead of, schedule.

The below schedule requirements are contractually binding for durations of activities indicated. The dates associated with each activity are subject to change based on coordination with other trades, however durations shall remain constant.

- a. *Submittals and Shop Drawings*:
- b. Anchor bolt and Embed plans: 30 Days
- c. Structural steel and decking Shop Drawings Approval: 8-week duration to submit, 2 week for review

Procurement & Delivery:

- a. Anchor bolt Delivery: 6 weeks
- b. Structural Steel Fabrication and Delivery: 16 weeks total design and delivery

Allowances and Unit Prices:

Lump sum and quantity allowances, when included, are to be utilized only when authorized, in writing, by the Construction Manager. Allowances are in addition to the requirements stated in this bid package or contract documents and are not to be used for costs associated with the required scope of work. All allowances are to be carried in the base bid.

Lump Sum Allowances:

Lump Sum Allowances are those listed herein with fixed dollar amounts and are representative of the direct cost of the work performed. As such, overhead and profit is included in the base contract. In the event that a lump sum allowance is not utilized in full, applicable markups will be deducted from the remaining contract amount. Should the fixed dollar amount allowance be exceeded in the execution of the work as directed by Monteith, the subcontract will be increased by the direct cost of work plus overhead and profit as outlined in the General Conditions of the Contract. Utilization of a lump sum allowance is based on established unit rates, or on a time and material basis where Unit Prices are not specified.

Quantity Allowances:

Quantity allowances, when included, are to be carried at the quantity specified and a unit rate provided for each distinct unit requested in addition to the quantities required per contract documents. Reconciliation of quantity allowances will be based on agreed upon unit rates. All unutilized allowances will be deducted from the subcontract amount at the completion of this Scope of Work. The Unit Price may also be used to increase the contract sum as required or authorized by Monteith. Unit prices shall include all costs, benefits, overhead and fees. Total cost of quantity allowances are to be stated on bid forms.

A summary of allowances are as follows:

Lump Sum Allowances:

- 1. N/A

Quantity Allowances:

1. N/A

Alternates:

Alternates listed in the bid documents shall be carefully reviewed for impacts to the scope of this bid package. Alternate Prices shall include all costs associated with the changes, omissions, additions, or other adjustments to the work of the Bid Package as described in the alternate, or are reasonably inferable there from. Claims for extras resulting from changes caused by the acceptance or rejection of any alternate will not be allowed. Alternate Prices shall also include all cost of overhead, profit, and bond premiums associated with the work of the Alternate whether additive or deductive. The Drawings, Specifications, Project Manual, Addendum(s), and other Contract Documents shall be considered appropriately modified by either the acceptance or rejection of the various Alternatives. The Construction Manager and Owner expressly reserve the right to accept or reject any, or all, Alternate Prices and in any sequence. Acceptance or rejection of any alternate does not relieve the Bidder of timely completion of the Work within the time periods indicated.

Add Alternate No. 1 (Locker Room) – See Drawings Volume 2 Alternate No. 1

All work to rooms 115,116, 117,118

Add Alternate No. 2 (History Corridor)– See Drawings Volume 2 Alternate No. 2

All work to rooms 109, 110,119,120,121,122, Corridor Outside of Locker Rooms

**Deduct Alternate No. 3 (Drop Off Canopy Reduction) – See Drawings Volume 2
Alternate No. 3**

Revise layout of entry canopy.

Deduct Alternate No. 4 (Delete Tunnel) – See Drawings Volume 2 Alternate No. 4

Delete all work to Connector 112, Atrium 111, Elevator 1 and 2,
Mechanical Room 124, Storage 123

Bid Package – #07C – Insulated Metal Panels

Description of Work

In general, this Bid Package is comprehensive to specific CSI Division Work and related Work as referenced, indicated on, or implied by the Project Drawings, Specifications and Project Manual. Subcontractor acknowledges that the following Scope of Work detail is provided as a complementary document and must be used in conjunction with all Project Documents. Scope of Work listed is not intended to describe a complete and final work scope. It is provided as a summary overview only.

The scope of the work is identified in the following Specification(s) and further described below:

Specification	Description
Division 00 (All)	Procurement and Contracting Requirements
Division 01 (All)	General Requirements
07 42 00	Perforated Metal Wall Panels
07 42 13.19	Insulated Metal Wall Panels
07 42 13.23	Metal Composite Material Wall Panels
07 62 00	Sheet Metal Flashing and Trim
07 92 00	Joint Sealants
05 58 13	Metal Column Covers
05 70 00	Decorative Metal

Scope of Work Summary/Inclusions:

It is understood and agreed that this **Insulated Metal Panels** package includes all inclusions as described in the following subparagraphs regardless of whether or not they are included in the above specifications or any other specification section or shown on the plans:

Trade Specific Requirements:

1. This Subcontractor shall provide all metal composite wall panels, aluminum siding, aluminum soffits, and all trim, attachment systems, cavity insulation, sealants, closures, framing, etc. for a complete system from the face of air barriers (provided by others) to face of finished assemblies.
2. Includes all insulation behind metal panels and rainscreens.
3. All metal wall panels and rainscreens shall be field measured prior to fabrication of materials or fabricated based on hold dimensions provided by CMAR.
4. Includes selection of metal panel materials from manufacturers full range of colors and finishes including metallic finishes.
5. Includes all miscellaneous sub framing including Z girts, hat channels, or other furring/framing members required for completion of metal panels, aluminum siding, and rainscreen scope of work.
6. Includes rainscreen attachment systems meeting structural requirements as well as thermal and building envelope requirements

7. Rainscreen attachment systems shall not utilize continuous framing profiles penetrating insulation. Utilize clips vertically to substrate, vertical angle rails to clips, and horizontal hat channel rails attached to vertical rails as required.
8. Provide thermal insulation of rainscreen attachment system and fasteners as indicated in specifications.
9. Inspect all substrates prior to installation of materials and shim or align panels as required to achieve plumb and planar final installation.
10. Include shop drawings stamped by a licensed structural engineer in the state of North Carolina detailing all panel sizes, fastening, engineering and structural calculations, Sealant locations, flashings, transitions, terminations, closures, attachment systems, etc.
11. Provide flat strapping or additional rails as required for attachment of panels at panel ends.
12. Provide all closures, flashing, angles, transitions, etc. as required to neatly trim and provide moisture protection to all adjacent finishes. Include all trims indicated as “matching Metal Panel color”
13. Remove all protective films after completion of installations.
14. Provide phased delivery and installation of materials as required by CMAR.
15. Provide all metal panel to metal panel joint sealants required. Metal panels to adjacent non similar materials will be by waterproofing contractor.
16. Provide wet seals to all horizontal metal panels installations or where indicated.
17. Include all drop column covers with laser cut silver metallic finish and include stainless steel base. Metal framing will be done by drywall scope.
18. Include mockups of all assemblies, corners, transitions, terminations, soffits, supports, attachments, and accessories. Delivery and installation of mockup materials to be expedited.

Scope Specific Safety Requirements:

1. This subcontractor shall provide and install the following safety related materials:
2. Leading edge protection and warning flags from the start of roof to final acceptance of roof. Leading edge to be established from each entry stair to full perimeter of roof area.
3. The parapet is not suitable height for fall prevention and all Monteith and OSHA regulations related to fall protection will be enforced while working on the roof.
4. Provide project specific Safety manual to construction manager prior to commencing work. Include the following:
5. Hoisting plans for materials
6. Project specific fall protection plan.

7. Identification of OSHA approved competent person onsite daily.
8. MSDS documentation

Project Specific Scope of Work Inclusions:

1. The following is provided as a courtesy and is not intended to fully represent the scope of work required by plans and specifications. Drawing references are intended to be references to similar details relevant to the scope and may not be limited to the details referenced.
2. Provide any flashings installed behind metal panels including thruwall flashings, head of wall flashing, two piece counter flashings, etc.
3. Provide all aluminum J trims or aluminum angle trims at insulation terminations where indicated adjacent to metal panels or as “color to match soffit (or metal Panel)”
4. Provide flexible flashings above thruwall flashing installed behind metal panels or rainscreen attachment systems. Includes flexible flashing, termination bar with caulking on top edge, and peel and stick transition membrane over termination bar.
5. Provide “J style” metal closure trims around all penetrations in ribbed metal panels. Closure trims to be sealed to air barriers and extend to outside of widest rib.
6. Include prefinished metal coping top of wall at metal panels.

Schedule Requirements:

TIME IS OF THE ESSENCE

Due to the nature of the project and the extreme cost of delayed delivery of the project, every effort shall be made by the Subcontractor to meet or improve upon the scheduled durations and dates provided below. The subcontractor shall contract with material suppliers, manufacturers, or vendors that have adequate capacity to supply materials or labor as required per schedule. Additionally, the subcontractor has included, in their base bid, sufficient manpower to achieve the below dates and concurrent workflows as required to complete the project on, or ahead of, schedule.

The below schedule requirements are contractually binding for durations of activities indicated. The dates associated with each activity are subject to change based on coordination with other trades, however durations shall remain constant.

1. *Submittals and Shop Drawings:*
 - Shop Drawings: 8 weeks to submit
 - Drawings Approval: 2 week for review

Allowances and Unit Prices:

Lump sum and quantity allowances, when included, are to be utilized only when authorized, in writing, by the Construction Manager. Allowances are in addition to the requirements stated in this bid package or contract documents and are not to be used for costs associated with the required scope of work. All allowances are to be carried in the base bid.

Lump Sum Allowances:

Lump Sum Allowances are those listed herein with fixed dollar amounts and are representative of the direct cost of the work performed. As such, overhead and profit is included in the base contract. In the event that a lump sum allowance is not utilized in full, applicable markups will be deducted from the remaining contract amount. Should the fixed dollar amount allowance be exceeded in the execution of the work as directed by Monteith, the subcontract will be increased by the direct cost of work plus overhead and profit as outlined in the General Conditions of the Contract. Utilization of a lump sum allowance is based on established unit rates, or on a time and material basis where Unit Prices are not specified.

Quantity Allowances:

Quantity allowances, when included, are to be carried at the quantity specified and a unit rate provided for each distinct unit requested in addition to the quantities required per contract documents. Reconciliation of quantity allowances will be based on agreed upon unit rates. All unutilized allowances will be deducted from the subcontract amount at the completion of this Scope of Work. The Unit Price may also be used to increase the contract sum as required or authorized by Monteith. Unit prices shall include all costs, benefits, overhead and fees. Total cost of quantity allowances are to be stated on bid forms.

A summary of allowances are as follows:

Lump Sum Allowances:

1. N/A

Quantity Allowances:

1. N/A

Alternates:

Alternates listed in the bid documents shall be carefully reviewed for impacts to the scope of this bid package. Alternate Prices shall include all costs associated with the changes, omissions, additions, or other adjustments to the work of the Bid Package as described in the alternate, or are reasonably inferable there from. Claims for extras resulting from changes caused by the acceptance or rejection of any alternate will not be allowed. Alternate Prices shall also include all cost of overhead, profit, and bond premiums associated with the work of the Alternate whether additive or deductive. The Drawings, Specifications, Project Manual, Addendum(s), and other Contract Documents shall be considered appropriately modified by either the acceptance or rejection of the various Alternatives. The Construction Manager and Owner expressly reserve the right to accept or reject any, or all, Alternate Prices and in any sequence. Acceptance or rejection of any alternate does not relieve the Bidder of timely completion of the Work within the time periods indicated.

Add Alternate No. 1 (Locker Room) – See Drawings Volume 2 Alternate No. 1
All work to rooms 115,116, 117,118

Add Alternate No. 2 (History Corridor)– See Drawings Volume 2 Alternate No. 2

All work to rooms 109, 110, 119, 120, 121, 122, Corridor Outside of Locker Rooms

**Deduct Alternate No. 3 (Drop Off Canopy Reduction) – See Drawings Volume 2
Alternate No. 3**

Revise layout of entry canopy.

Deduct Alternate No. 4 (Delete Tunnel) – See Drawings Volume 2 Alternate No. 4

Delete all work to Connector 112, Atrium 111, Elevator 1 and 2,
Mechanical Room 124, Storage 123

Bid Package – #07E – Waterproofing

Description of Work

In general, this Bid Package is comprehensive to specific CSI Division Work and related Work as referenced, indicated on, or implied by the Project Drawings, Specifications and Project Manual. Subcontractor acknowledges that the following Scope of Work detail is provided as a complementary document and must be used in conjunction with all Project Documents. Scope of Work listed is not intended to describe a complete and final work scope. It is provided as a summary overview only.

The scope of the work is identified in the following Specification(s) and further described below:

Specification	Description
Division 00 (All)	Procurement and Contracting Requirements
Division 01 (All)	General Requirements
07 14 00	Fluid-Applied Membrane Waterproofing
07 14 16	Cold Fluid Applied Waterproofing
07 17 00	Bentonite Waterproofing
07 27 26	Fluid-Applied Membrane Air Barriers
07 92 00	Joint Sealants
07 95 13.16	Exterior Expansion Joint Cover Assemblies
07 95 13.19	Parking Deck Expansion Joint Cover Assemblies
07 21 00	Thermal Insulation (As Pertains)

Scope of Work Summary/Inclusions:

It is understood and agreed that this **Waterproofing** package includes all inclusions as described in the following subparagraphs regardless of whether or not they are included in the above specifications or any other specification section or shown on the plans:

Trade Specific Requirements:

1. Furnish and install all Fluid-Applied Membrane Waterproofing per specification section 07 11 00 including waterproofing materials, primers, reinforcing strips, sealants, flashings, rigid insulation, and all miscellaneous accessories for a complete, watertight assembly.
2. This contractor includes all elevator and escalator pit waterproofing.
3. This subcontractor includes waterproofing of tunnel. Include for waterproofing of construction joints at exterior and interior of tunnel.
4. This project will require multiple mobilizations.

Schedule Requirements:

TIME IS OF THE ESSENCE

Due to the nature of the project and the extreme cost of delayed delivery of the project, every effort shall be made by the Subcontractor to meet or improve upon the scheduled durations and dates provided below. The subcontractor shall contract with material suppliers, manufacturers, or vendors that have adequate capacity to supply materials or labor as required per schedule. Additionally, the subcontractor has included, in their base

bid, sufficient manpower to achieve the below dates and concurrent workflows as required to complete the project on, or ahead of, schedule.

The below schedule requirements are contractually binding for durations of activities indicated. The dates associated with each activity are subject to change based on coordination with other trades, however durations shall remain constant.

1. *Submittals and Shop Drawings:*

- Shop Drawings: 6 weeks to submit
- Drawings Approval: 2 week for review

Allowances and Unit Prices:

Lump sum and quantity allowances, when included, are to be utilized only when authorized, in writing, by the Construction Manager. Allowances are in addition to the requirements stated in this bid package or contract documents and are not to be used for costs associated with the required scope of work. All allowances are to be carried in the base bid.

Lump Sum Allowances:

Lump Sum Allowances are those listed herein with fixed dollar amounts and are representative of the direct cost of the work performed. As such, overhead and profit is included in the base contract. In the event that a lump sum allowance is not utilized in full, applicable markups will deducted from the remaining contract amount. Should the fixed dollar amount allowance be exceeded in the execution of the work as directed by Monteith, the subcontract will be increased by the direct cost of work plus overhead and profit as outlined in the General Conditions of the Contract. Utilization of a lump sum allowance is based on established unit rates, or on a time and material basis where Unit Prices are not specified.

Quantity Allowances:

Quantity allowances, when included, are to be carried at the quantity specified and a unit rate provided for each distinct unit requested in addition to the quantities required per contract documents. Reconciliation of quantity allowances will be based on agreed upon unit rates. All unutilized allowances will be deducted from the subcontract amount at the completion of this Scope of Work. The Unit Price may also be used to increase the contract sum as required or authorized by Monteith. Unit prices shall include all costs, benefits, overhead and fees. Total cost of quantity allowances are to be stated on bid forms.

A summary of allowances are as follows:

Lump Sum Allowances:

1. N/A

Quantity Allowances:

1. N/A

Alternates:

Alternates listed in the bid documents shall be carefully reviewed for impacts to the scope of this bid package. Alternate Prices shall include all costs associated with the changes, omissions, additions, or other adjustments to the work of the Bid Package as described in the alternate, or are reasonably inferable there from. Claims for extras resulting from changes caused by the acceptance or rejection of any alternate will not be allowed. Alternate Prices shall also include all cost of overhead, profit, and bond premiums associated with the work of the Alternate whether additive or deductive. The Drawings, Specifications, Project Manual, Addendum(s), and other Contract Documents shall be considered appropriately modified by either the acceptance or rejection of the various Alternatives. The Construction Manager and Owner expressly reserve the right to accept or reject any, or all, Alternate Prices and in any sequence. Acceptance or rejection of any alternate does not relieve the Bidder of timely completion of the Work within the time periods indicated.

Add Alternate No. 1 (Locker Room) – See Drawings Volume 2 Alternate No. 1

All work to rooms 115,116, 117,118

Add Alternate No. 2 (History Corridor)– See Drawings Volume 2 Alternate No. 2

All work to rooms 109, 110,119,120,121,122, Corridor Outside of Locker Rooms

**Deduct Alternate No. 3 (Drop Off Canopy Reduction) – See Drawings Volume 2
Alternate No. 3**

Revise layout of entry canopy.

Deduct Alternate No. 4 (Delete Tunnel) – See Drawings Volume 2 Alternate No. 4

Delete all work to Connector 112, Atrium 111, Elevator 1 and 2,
Mechanical Room 124, Storage 123

Bid Package – #08B – Glass and Glazing

Description of Work

In general, this Bid Package is comprehensive to specific CSI Division Work and related Work as referenced, indicated on, or implied by the Project Drawings, Specifications and Project Manual. Subcontractor acknowledges that the following Scope of Work detail is provided as a complementary document and must be used in conjunction with all Project Documents. Scope of Work listed is not intended to describe a complete and final work scope. It is provided as a summary overview only.

The scope of the work is identified in the following Specification(s) and further described below:

Specification	Description
Division 00 (All)	Procurement and Contract Requirements
Division 01 (All)	General Requirements
07 62 00	Sheet Metal Flashing and Trim
07 92 00	Joint Sealants
08 41 13	Interior Aluminum Framed Entrances and Storefronts
08 44 13	Glazed Aluminum Curtain Walls
08 45 00	Translucent Wall and Roof Assemblies
08 46 00	Automatic Entrance Doors
08 51 13	Aluminum Windows
08 71 00	Door Hardware (Alum. Door Hardware)
08 80 00	Glazing
08 84 00	Plastic Glazing
08 91 19	Fixed Louvers
05 73 13	Glazed Decorative Metal Railings

Scope of Work Summary/Inclusions:

It is understood and agreed that this **Glass and Glazing** package includes all inclusions as described in the following subparagraphs regardless of whether they are included in the above specifications or any other specification section or shown on the plans:

Trade Specific Requirements:

1. Furnish and Install all Glazed Aluminum Curtain Walls per specification section 08 44 13. Including all sims and caulking.
2. Include supply and installation of all glazing per specification section 08 80 00
 - a. Includes all glazing meeting structural performance, windborne-debris-impact resistance, safety glazing, and thermal/optical performance properties as specified.
 - b. Include all float glass, reflective and Low-E coated vision glass, ceramic coated vision glass, spandrel glass, fire rated and laminated glass.
 - c. Include all dry gaskets and wet sealants as required.

- d. Include initial cleaning after installation, removal of all stickers, films, etc.
 - e. Includes all borrowed lites for all wood doors, hollow metal doors, transoms, and sidelites
 3. Include supply and installation of all translucent wall and Roof Assemblies per specification section 08 45 00 including all framing, translucent panels, gasketing, sealants, fasteners, etc.
 - a. Includes all girts, purlins, and framing members required to span from structural steel provided per structural drawings.
 - b. Include all steel angles, clips, fasteners, welding, etc as required for connection to structural members.
 - c. All panel assemblies shall meet design loads per specifications.
 - d. Monolithic polycarbonate glazing panel system shall provide a complete canopy glazing assembly that is weather tight. Includes connections, sealants, flashing, etc as required for weathertight connection to adjacent assemblies.
 - e.
 4. Includes supply and installation of all fixed louvers per specification section 08 91 19
 - a. Include all fixed wind-driven-rain-resistant louvers as required
 - b. Coordinate free area requirements with architectural and mechanical plans.
 - c. Include all aluminum finishes per plans and specifications as selected by architect and owner. Including full range of colors and gloss
 - d. Include all louver screens
 - e. Include blank off panels as required for mechanical free area requirements and duct sizes.
 - f. Include all sealants and gasketing
 5. Includes Sheet metal flashings and trims per specification section 07 62 00 as related to the storefront and curtain wall scope of work. Includes all flashing and trims that extend below any system installed as part of this bid package or to which any system curtainwall/storefront system is caulked.
 - a. Includes extended metal sill flashings per A1/A508 Volume I.
 6. Includes all Automatic Entrance doors per specification section 08 46 00 including all glazing, frames, automatic openers, controllers, low voltage wiring, installation, sensors, integration with security systems, etc. as required for a complete system.

- a. Includes all warranty and maintenance/service requirements per specifications
 - b. Includes color and aluminum finish to match adjacent curtainwall/storefront finishes as selected by architect and owner.
 - c. Includes all signage affixed to doors as required by BHMA A156.10
 - d. Include all door operators, motion sensors, presence sensors, combination motion/presence sensors, photoelectric beams, key switches, electrical interlocks, and opening-width control.
7. Includes all door hardware for storefront doors per specification section 08 71 00 including all locking hardware, cylinders, thresholds, hinges, electrified hardware, etc.
- a. Coordinate all hardware with ILM requirements and keyways
 - b. Provide temporary construction cores in all cylinders provided as part of this scope.
 - c. Permanent cores to be provide by others.
8. Includes removal of all factory stickers and residue
9. Includes shop drawings and calculations completed and signed by a North Carolina professional engineer.
10. Includes three (3) caulk joints per curtainwall or exterior storefront frame- one interior, one primary exterior seal, and one cosmetic seal from mullion cap to adjacent materials. Caulking adheres to Joint sealants specifications and is to be of a color selected by Architect from manufacturers full range of options including custom color match. Provide two caulk joints per interior storefront frame.
11. Install mineral wood insulation between interior caulk joint and primary exterior joint under frame on all sides.

Scope Specific Safety Requirements:

Schedule Requirements:

TIME IS OF THE ESSENCE

Due to the nature of the project and the extreme cost of delayed delivery of the project, every effort shall be made by the Subcontractor to meet or improve upon the scheduled durations and dates provided below. The subcontractor shall contract with material suppliers, manufacturers, or vendors that have adequate capacity to supply materials or labor as required per schedule. Additionally, the subcontractor has included, in their base bid, sufficient manpower to achieve the below dates and concurrent workflows as required to complete the project on, or ahead of, schedule.

The below schedule requirements are contractually binding for durations of activities indicated. The dates associated with each activity are subject to change based on coordination with other trades, however durations shall remain constant.

1. *Submittals and Shop Drawings:*
 - Shop Drawings: 12 weeks to submit
 - Drawings Approval: 2 week for review:
2. *Procurement & Delivery:*

Allowances and Unit Prices:

Lump sum and quantity allowances, when included, are to be utilized only when authorized, in writing, by the Construction Manager. Allowances are in addition to the requirements stated in this bid package or contract documents and are not to be used for costs associated with the required scope of work. All allowances are to be carried in the base bid.

Lump Sum Allowances:

Lump Sum Allowances are those listed herein with fixed dollar amounts and are representative of the direct cost of the work performed. As such, overhead and profit is included in the base contract. In the event that a lump sum allowance is not utilized in full, applicable markups will deducted from the remaining contract amount. Should the fixed dollar amount allowance be exceeded in the execution of the work as directed by Monteith, the subcontract will be increased by the direct cost of work plus overhead and profit as outlined in the General Conditions of the Contract. Utilization of a lump sum allowance is based on established unit rates, or on a time and material basis where Unit Prices are not specified.

Quantity Allowances:

Quantity allowances, when included, are to be carried at the quantity specified and a unit rate provided for each distinct unit requested in addition to the quantities required per contract documents. Reconciliation of quantity allowances will be based on agreed upon unit rates. All unutilized allowances will be deducted from the subcontract amount at the completion of this Scope of Work. The Unit Price may also be used to increase the contract sum as required or authorized by Monteith. Unit prices shall include all costs, benefits, overhead and fees. Total cost of quantity allowances are to be stated on bid forms.

A summary of allowances are as follows:

Lump Sum Allowances:

1. N/A

Quantity Allowances:

1. N/A

Alternates:

Alternates listed in the bid documents shall be carefully reviewed for impacts to the scope of this bid package. Alternate Prices shall include all costs associated with the changes, omissions, additions, or other adjustments to the work of the Bid Package as described in the alternate, or are reasonably inferable there from. Claims for extras resulting from changes caused by the acceptance or rejection of any alternate will not be allowed. Alternate Prices shall also include all cost of overhead, profit, and bond premiums associated with the work of the Alternate whether

additive or deductive. The Drawings, Specifications, Project Manual, Addendum(s), and other Contract Documents shall be considered appropriately modified by either the acceptance or rejection of the various Alternatives. The Construction Manager and Owner expressly reserve the right to accept or reject any, or all, Alternate Prices and in any sequence. Acceptance or rejection of any alternate does not relieve the Bidder of timely completion of the Work within the time periods indicated.

Add Alternate No. 1 (Locker Room) – See Drawings Volume 2 Alternate No. 1

All work to rooms 115,116, 117,118

Add Alternate No. 2 (History Corridor)– See Drawings Volume 2 Alternate No. 2

All work to rooms 109, 110,119,120,121,122, Corridor Outside of Locker Rooms

**Deduct Alternate No. 3 (Drop Off Canopy Reduction) – See Drawings Volume 2
Alternate No. 3**

Revise layout of entry canopy.

Deduct Alternate No. 4 (Delete Tunnel) – See Drawings Volume 2 Alternate No. 4

Delete all work to Connector 112, Atrium 111, Elevator 1 and 2,
Mechanical Room 124, Storage 123

Bid Package – #09A – Framing and Drywall

Description of Work

In general, this Bid Package is comprehensive to specific CSI Division Work and related Work as referenced, indicated on, or implied by the Project Drawings, Specifications and Project Manual. Subcontractor acknowledges that the following Scope of Work detail is provided as a complementary document and must be used in conjunction with all Project Documents. Scope of Work listed is not intended to describe a complete and final work scope. It is provided as a summary overview only.

The scope of the work is identified in the following Specification(s) and further described below:

Specification	Description
Division 00 (All)	Procurement and Contracting Requirements
Division 01 (All)	General Requirements
05 40 00	Cold-Formed Metal Framing
06 10 00	Rough Carpentry
06 16 00	Sheathing
07 28 00	Joint Sealants (as pertains)
08 91 19	Fixed Louvers
09 22 16	Non-Structural Metal Framing
09 29 00	Gypsum Board

Scope of Work Summary/Inclusions:

It is understood and agreed that this **Framing and Drywall** package includes all inclusions as described in the following subparagraphs regardless of whether or not they are included in the above specifications or any other specification section or shown on the plans:

Trade Specific Requirements:

1. This Subcontractor shall provide a complete drywall package in accordance with the Contract Documents that includes, but is not limited to the following items: structural metal studs, non-load bearing metal studs, cold formed metal framing, bridging, metal strapping (16ga or thicker), all interior in-wall wood blocking, wood blocking at perimeter walls, all other required wood blocking in metal stud walls, bracing, track, channels, furring, corner beads, gauge metals, trims, fasteners, horizontal and vertical shaft assemblies, acoustical assemblies, fire resistant assemblies, acoustical sealants, gypsum board (abuse-resistant, fire-resistant, moisture-resistant, regular, etc.), cement board, backer board, control joints, reveals, trim pieces, metal backing, in-wall insulation (thermal and sound), taping, bedding, finishing of drywall, etc. as may be required to provide a complete and functional drywall package, whether detailed and/or implied on the Contract Documents.
2. Includes engineering of all cold-formed metal framing, & structural light gauge metal framing on this project (exterior walls, framing, support framing, etc.). Submit shop drawings and calculations signed and sealed by a registered Professional Engineer in North Carolina for approval by the Structural Engineer and Architect. Include fully dimensioned plans and elevations with cross sections and details depicting all part member locations,

orientations, and layout. Indicate member sizes and gauge designations, number, type, and spacing. Indicate supplemental strapping, bracing, bridging accessories, and details required for proper installation. Include details of connections which indicate screw types, quantities, locations, and weld size and locations, and any other fastener requirements.

3. Stud details shown Contract Documents indicate general installation and connection methods. Complete detailing of components for all loads and forces are shown on the shop drawings. This Subcontractor is responsible for obtaining all information on all loads and connections to the structural stud system. Any additional re-work required to incorporate all loads and connections into the design will be the responsibility of this Subcontractor.
4. Provide all layout required interior and exterior wall framing. Inspect structural steel framing plumb prior to beginning installation of walls and notify CM of any discrepancies. Layout to include all framed openings, penetration openings, door numbers, door swing, etc. Where floors are scheduled to be finished with clear sealers- no floor layout outside of walls is permitted.
5. Provide required suspension systems for drywall ceilings, bulkheads, soffits, light coves, and for all other work provided under this Bid Package.
6. Top out of all walls above ceiling shall be installed with XP or Moisture resistant drywall where 20' inside of building perimeter or where not exposed to potential wind driven rain or water intrusion from shafts prior to window installations and eXP board at all top out potentially exposed to wind driven rain or around shafts.
7. This Subcontractor shall provide moisture resistant board at the exterior of all electrical, data, and mechanical rooms to allow for installation of drywall and equipment prior to the complete dry-in of the building. Moisture resistant board should also be installed in all other areas requiring early installation before dry-in of the building.
8. Coordinate framing around work installed by other trades and existing conditions as required. Provide holes, cutouts, framing and related requirements for miscellaneous specialties, light fixtures, electrical and mechanical work, etc. as required. It is the responsibility of this Bid Package to request any required framing block-outs prior to framing walls and ceilings (access panels, lights, etc.). Any re-framing required due to lack of coordination will be the responsibility of this Bid Package.
9. Provide task lighting as required for the work of this Bid Package.
10. Provide rated top-of-wall assemblies and deflection track at all GWB partitions. Provide the top track or clips in a sufficient depth to allow for Fireproofing of structural beams and deflection in the deck, as required at partitions and / or soffits.
11. Provide fire-stopping and/or smoke stopping at top and bottom of all rated walls as required by the Contract Documents
12. Penetrations in walls will be fire-stopped and smoke stopped by the Subcontractor making the penetration. All penetrations through nonrated partitions shall be sealed by this subcontractor.

13. Includes receiving, inventorying, and installing (where set in metal framing) all Hollow metal door frames provided by others. Removal of spreader bars is by this subcontractor after installation of drywall.
14. Include full-time supervision while crews (including lower tier subcontractors) are working on site whose sole responsibility is quality control, safety, material ordering, and ensuring work areas are clean and efficient.
15. Includes all interior wood blocking and metal strapping for all casework, wall mounted accessories, wall finishes, trims, shades, projectors, AV equipment, toilet accessories, toilet compartments, etc.
16. Includes all trims including but not limited to control joint v grooves, L trims, J trim, F trims, tear away beads, corner beads, heavy duty corner trims, reveals, etc installed in drywall or where required for termination to adjacent finishes.
17. Includes all Level 5 drywall finish as indicated in drawings.
18. Includes all aluminum or drywall column boxouts and covers.
19. Includes supplemental framing as required for box out of penetrations for other trades. Coordinate with CM and other trades for box out requirements. Penetration layouts to be provided to this subcontractor during wall framing.
20. Provide and install any knee wall supplemental bracing as required.
21. Provide labeling and identification markings for priority, fire, smoke, smoke-tight and / or sound partition walls as specified or required by code.
22. Includes all plywood backboards for telecommunications and backer for millwork installations.
23. Include Temporary window coverings for all curtainwall and storefront openings until storefront installation is completed.
24. Include point up of drywall surfaces at the following intervals: after final finishing and sanding, after prime and first coat of paint, after CM punch list generation, and after owner/architect punch list. Point up shall include any defects, voids, knicks, screw pops, inconsistent joints, minor damages by other trades (smaller than 2" wide). Any cutting, removal, or extensive damage by others shall not be considered point up and shall be compensable through allowance.

Scope Specific Safety Requirements:

1. This subcontractor shall provide and install the following safety related materials:
 - a. Include mid/top rails and toe boards (as required) across all curtain wall openings prior to window installations after framing is installed.
 - b. Include the removal of all perimeters leading edge cabling, posts (including gridding of posts), and toe boards during installation of exterior wall framing. Modify cables/toe boards or provide temporary measures as required to ensure cabling or wall framing provides continuous leading-edge protection around the building at all times.

2. The parapet is not suitable height for fall prevention and all Monteith and OSHA regulations related to fall protection will be enforced while working on the roof.
3. Provide project specific Safety manual to construction manager prior to commencing work. Include the following:
 - a. Hoisting plans for materials
 - b. Project specific fall protection plan.
 - c. Identification of OSHA approved competent person onsite daily.
 - d. MSDS documentation

Project Specific Scope of Work Inclusions:

The following is provided as a courtesy and is not intended to fully represent the scope of work required by plans and specifications. Drawing references are intended to be references to similar details relevant to the scope and may not be limited to the details referenced.

1. Furnish and install all interior and exterior sheathing
2. Includes all tile backer board furnish and installation. Joints and fasteners to be bedded and sealed ready to receive waterproofing.
3. Includes all studs, gypsum board, insulation, sealants, etc. as indicated on Interior wall assemblies.
4. Includes ALL interior and exterior wood blocking including but not limited to:
 - a. Roof, window, door, edge of slab, blocking
 - b. All interior blocking for toilet accessories, toilet partitions, millwork, decorative wall, wall finishes, AV equipment, ITS room backboards, locker bases, etc.
5. This contractor includes GRG columns show on drawing B4/A505.
6. This contractor provides weatherproof infill at windows removed drawing AD107.
7. This contractor includes all metal framing to column covers.
8. This contractor to include for 10 – 2' x 2' ceiling access panels.
9. Include an allowance of \$75,000 for temporary walls.
10. Include an allowance of \$15,000 for drywall touch up

Schedule Requirements:

TIME IS OF THE ESSENCE

Due to the nature of the project and the extreme cost of delayed delivery of the project, every effort shall be made by the Subcontractor to meet or improve upon the scheduled durations and dates provided below. The subcontractor shall contract with material suppliers, manufacturers, or vendors that have adequate capacity to supply materials or labor as required per schedule. Additionally, the subcontractor has included, in their base bid, sufficient manpower to achieve the below dates and concurrent workflows as required to complete the project on, or ahead of, schedule.

The below schedule requirements are contractually binding for durations of activities indicated. The dates associated with each activity are subject to change based on coordination with other trades, however durations shall remain constant.

1. *Submittals and Shop Drawings:*
 - Shop Drawings: 8 weeks
 - Drawings Approval: 2 week for review:

Allowances and Unit Prices:

Lump sum and quantity allowances, when included, are to be utilized only when authorized, in writing, by the Construction Manager. Allowances are in addition to the requirements stated in this bid package or contract documents and are not to be used for costs associated with the required scope of work. All allowances are to be carried in the base bid.

Lump Sum Allowances:

Lump Sum Allowances are those listed herein with fixed dollar amounts and are representative of the direct cost of the work performed. As such, overhead and profit is included in the base contract. In the event that a lump sum allowance is not utilized in full, applicable markups will deducted from the remaining contract amount. Should the fixed dollar amount allowance be exceeded in the execution of the work as directed by Monteith, the subcontract will be increased by the direct cost of work plus overhead and profit as outlined in the General Conditions of the Contract. Utilization of a lump sum allowance is based on established unit rates, or on a time and material basis where Unit Prices are not specified.

Quantity Allowances:

Quantity allowances, when included, are to be carried at the quantity specified and a unit rate provided for each distinct unit requested in addition to the quantities required per contract documents. Reconciliation of quantity allowances will be based on agreed upon unit rates. All unutilized allowances will be deducted from the subcontract amount at the completion of this Scope of Work. The Unit Price may also be used to increase the contract sum as required or authorized by Monteith. Unit prices shall include all costs, benefits, overhead and fees. Total cost of quantity allowances are to be stated on bid forms.

A summary of allowances are as follows:

Lump Sum Allowances:

1. Include an allowance of \$75,000 for temporary walls.
2. Include an allowance of \$15,000 for drywall touch up

Quantity Allowances:

1. N/A

Alternates:

Alternates listed in the bid documents shall be carefully reviewed for impacts to the scope of this bid package. Alternate Prices shall include all costs associated with the changes, omissions,

additions, or other adjustments to the work of the Bid Package as described in the alternate, or are reasonably inferable there from. Claims for extras resulting from changes caused by the acceptance or rejection of any alternate will not be allowed. Alternate Prices shall also include all cost of overhead, profit, and bond premiums associated with the work of the Alternate whether additive or deductive. The Drawings, Specifications, Project Manual, Addendum(s), and other Contract Documents shall be considered appropriately modified by either the acceptance or rejection of the various Alternatives. The Construction Manager and Owner expressly reserve the right to accept or reject any, or all, Alternate Prices and in any sequence. Acceptance or rejection of any alternate does not relieve the Bidder of timely completion of the Work within the time periods indicated.

Add Alternate No. 1 (Locker Room) – See Drawings Volume 2 Alternate No. 1

All work to rooms 115,116, 117,118

Add Alternate No. 2 (History Corridor)– See Drawings Volume 2 Alternate No. 2

All work to rooms 109, 110,119,120,121,122, Corridor Outside of Locker Rooms

**Deduct Alternate No. 3 (Drop Off Canopy Reduction) – See Drawings Volume 2
Alternate No. 3**

Revise layout of entry canopy.

Deduct Alternate No. 4 (Delete Tunnel) – See Drawings Volume 2 Alternate No. 4

Delete all work to Connector 112, Atrium 111, Elevator 1 and 2,
Mechanical Room 124, Storage 123

Bid Package – #09B – Ceilings

Description of Work

In general, this Bid Package is comprehensive to specific CSI Division Work and related Work as referenced, indicated on, or implied by the Project Drawings, Specifications and Project Manual. Subcontractor acknowledges that the following Scope of Work detail is provided as a complementary document and must be used in conjunction with all Project Documents. Scope of Work listed is not intended to describe a complete and final work scope. It is provided as a summary overview only.

The scope of the work is identified in the following Specification(s) and further described below:

Specification	Description
Division 00 (All)	Procurement and Contracting Requirements
Division 01 (All)	General Requirements
09 50 00	Suspended Metal Panel Ceilings
09 51 23	Acoustical Tile Ceilings

Scope of Work Summary/Inclusions:

It is understood and agreed that this **Ceilings** package includes all inclusions as described in the following subparagraphs regardless of whether or not they are included in the above specifications or any other specification section or shown on the plans:

Trade Specific Requirements:

1. Includes all interior metal ceilings systems, ACT ceilings, Axiom trims, hangers, supports, access panels in ceilings within this scope, decorative sound absorption panels, suspension systems etc.
2. All ceilings to be centered in rooms or openings. Utilize 2x4 tiles cut to size to avoid small sections of ceilings adjacent to walls.
3. Provide additional ceiling grid members as required to trim around linear fixtures.
4. Provide axiom trims or equal metal fascia trims at all areas indicated.
5. Includes all ceilings with the exception of gypsum board ceilings.
6. Enough ceiling materials of each type are to be provided during installation of ceiling suspension systems for ceiling device installations by others.
7. Cut ceiling tiles for installation around sprinkler heads.
8. Provide non-sag, humidity resistant tiles (humiguard or equal)
9. Provide additional supplemental framing members as required for installation of suspension hangers below obstructions.
10. Provide all grid restraining clips stabilizing bars, seismic struts, etc. as required based on seismic category.
11. Provide accessories and trim required per contract documents including splice plates, T-Bar connector clips, perimeter hold down clips, factory fabricated corners, perimeter pocket trims, Wall molding, etc.
12. Provide all interior flush gasketed ceiling expansion joints where ACT is installed on one or both sides of expansion joint.

13. Include for replacement of damage or discolored ceiling tiles during punch list not to exceed 2% of each tile type provided. This is in addition to attic stock materials required per specifications.
14. Includes all acoustical sealants to ceiling installations as indicated in specifications

Scope Specific Safety Requirements:

1. Provide scaffolding, approved equipment, or other means necessary to access all work areas including stairs, open ceilings at commons, etc.

Project Specific Scope of Work Inclusions:

The following is provided as a courtesy and is not intended to fully represent the scope of work required by plans and specifications. Drawing references are intended to be references to similar details relevant to the scope and may not be limited to the details referenced.

1. Include Supplemental framing as required.
2. Install grid wire clips to decking where possible to avoid damage to spray applied fireproofing.
3. Provide manufacturer recommended suspension bridging, yokes, or additional supplemental support framing as required where penetrations interfere with suspension systems.
4. Provide lateral sway bracing for all cloud ceiling applications in a manner not visible from floor level.
5. Provide perimeter trims with factory corners, terminations, clips, supports etc.

Schedule Requirements:

TIME IS OF THE ESSENCE

Due to the nature of the project and the extreme cost of delayed delivery of the project, every effort shall be made by the Subcontractor to meet or improve upon the scheduled durations and dates provided below. The subcontractor shall contract with material suppliers, manufacturers, or vendors that have adequate capacity to supply materials or labor as required per schedule. Additionally, the subcontractor has included, in their base bid, sufficient manpower to achieve the below dates and concurrent workflows as required to complete the project on, or ahead of, schedule.

The below schedule requirements are contractually binding for durations of activities indicated. The dates associated with each activity are subject to change based on coordination with other trades, however durations shall remain constant.

1. *Submittals and Shop Drawings:*
 - Shop Drawings: 6 weeks
 - Drawings Approval: 2 week for review:

Allowances and Unit Prices:

Lump sum and quantity allowances, when included, are to be utilized only when authorized, in writing, by the Construction Manager. Allowances are in addition to the requirements stated in this bid package or contract documents and are not to be used for costs associated with the required scope of work. All allowances are to be carried in the base bid.

Lump Sum Allowances:

Lump Sum Allowances are those listed herein with fixed dollar amounts and are representative of the direct cost of the work performed. As such, overhead and profit is included in the base contract. In the event that a lump sum allowance is not utilized in full, applicable markups will be deducted from the remaining contract amount. Should the fixed dollar amount allowance be exceeded in the execution of the work as directed by Monteith, the subcontract will be increased by the direct cost of work plus overhead and profit as outlined in the General Conditions of the Contract. Utilization of a lump sum allowance is based on established unit rates, or on a time and material basis where Unit Prices are not specified.

Quantity Allowances:

Quantity allowances, when included, are to be carried at the quantity specified and a unit rate provided for each distinct unit requested in addition to the quantities required per contract documents. Reconciliation of quantity allowances will be based on agreed upon unit rates. All unutilized allowances will be deducted from the subcontract amount at the completion of this Scope of Work. The Unit Price may also be used to increase the contract sum as required or authorized by Monteith. Unit prices shall include all costs, benefits, overhead and fees. Total cost of quantity allowances are to be stated on bid forms.

A summary of allowances are as follows:

Lump Sum Allowances:

1. N/A

Quantity Allowances:

1. N/A

Alternates:

Alternates listed in the bid documents shall be carefully reviewed for impacts to the scope of this bid package. Alternate Prices shall include all costs associated with the changes, omissions, additions, or other adjustments to the work of the Bid Package as described in the alternate, or are reasonably inferable there from. Claims for extras resulting from changes caused by the acceptance or rejection of any alternate will not be allowed. Alternate Prices shall also include all cost of overhead, profit, and bond premiums associated with the work of the Alternate whether additive or deductive. The Drawings, Specifications, Project Manual, Addendum(s), and other Contract Documents shall be considered appropriately modified by either the acceptance or rejection of the various Alternatives. The Construction Manager and Owner expressly reserve the right to accept or reject any, or all, Alternate Prices and in any sequence. Acceptance or rejection of any alternate does not relieve the Bidder of timely completion of the Work within the time periods indicated.

Add Alternate No. 1 (Locker Room) – See Drawings Volume 2 Alternate No. 1

All work to rooms 115,116, 117,118

Add Alternate No. 2 (History Corridor)– See Drawings Volume 2 Alternate No. 2

All work to rooms 109, 110,119,120,121,122, Corridor Outside of Locker Rooms

**Deduct Alternate No. 3 (Drop Off Canopy Reduction) – See Drawings Volume 2
Alternate No. 3**

Revise layout of entry canopy.

Deduct Alternate No. 4 (Delete Tunnel) – See Drawings Volume 2 Alternate No. 4

Delete all work to Connector 112, Atrium 111, Elevator 1 and 2,
Mechanical Room 124, Storage 123

Bid Package – #09C – Terrazzo

Description of Work

In general, this Bid Package is comprehensive to specific CSI Division Work and related Work as referenced, indicated on, or implied by the Project Drawings, Specifications and Project Manual. Subcontractor acknowledges that the following Scope of Work detail is provided as a complementary document and must be used in conjunction with all Project Documents. Scope of Work listed is not intended to describe a complete and final work scope. It is provided as a summary overview only.

The scope of the work is identified in the following Specification(s) and further described below:

Specification	Description
Division 00 (All)	Procurement and Contracting Requirements
Division 01 (All)	General Requirements
09 66 23	Resinous Matric Terrazzo Flooring

Scope of Work Summary/Inclusions:

It is understood and agreed that this **Terrazzo** package includes all inclusions as described in the following subparagraphs regardless of whether or not they are included in the above specifications or any other specification section or shown on the plans:

Trade Specific Requirements:

1. This contractor includes full coverage of moisture mitigation at all terrazzo area. Also include moisture testing as required.
2. This contractor includes all precast terrazzo base.
3. Include temporary protection of walls and door frames as needed.
4. Multiple mobilizations to facilitate the project schedule.
5. All concrete is to be reviewed and approved prior to mobilization to site to commence work. Any non-conforming substrates are to be brought to MCC immediately upon identification.

Schedule Requirements:

TIME IS OF THE ESSENCE

Due to the nature of the project and the extreme cost of delayed delivery of the project, every effort shall be made by the Subcontractor to meet or improve upon the scheduled durations and dates provided below. The subcontractor shall contract with material suppliers, manufacturers, or vendors that have adequate capacity to supply materials or labor as required per schedule. Additionally, the subcontractor has included, in their base bid, sufficient manpower to achieve the below dates and concurrent workflows as required to complete the project on, or ahead of, schedule.

The below schedule requirements are contractually binding for durations of activities indicated. The dates associated with each activity are subject to change based on coordination with other trades, however durations shall remain constant.

1. *Submittals and Shop Drawings:*

- Shop Drawings: 8 weeks to submit
- Drawings Approval: 2 week for review:

Allowances and Unit Prices:

Lump sum and quantity allowances, when included, are to be utilized only when authorized, in writing, by the Construction Manager. Allowances are in addition to the requirements stated in this bid package or contract documents and are not to be used for costs associated with the required scope of work. All allowances are to be carried in the base bid.

Lump Sum Allowances:

Lump Sum Allowances are those listed herein with fixed dollar amounts and are representative of the direct cost of the work performed. As such, overhead and profit is included in the base contract. In the event that a lump sum allowance is not utilized in full, applicable markups will deducted from the remaining contract amount. Should the fixed dollar amount allowance be exceeded in the execution of the work as directed by Monteith, the subcontract will be increased by the direct cost of work plus overhead and profit as outlined in the General Conditions of the Contract. Utilization of a lump sum allowance is based on established unit rates, or on a time and material basis where Unit Prices are not specified.

Quantity Allowances:

Quantity allowances, when included, are to be carried at the quantity specified and a unit rate provided for each distinct unit requested in addition to the quantities required per contract documents. Reconciliation of quantity allowances will be based on agreed upon unit rates. All unutilized allowances will be deducted from the subcontract amount at the completion of this Scope of Work. The Unit Price may also be used to increase the contract sum as required or authorized by Monteith. Unit prices shall include all costs, benefits, overhead and fees. Total cost of quantity allowances are to be stated on bid forms.

A summary of allowances are as follows:

Lump Sum Allowances:

1. N/A

Quantity Allowances:

1. N/A

Alternates:

Alternates listed in the bid documents shall be carefully reviewed for impacts to the scope of this bid package. Alternate Prices shall include all costs associated with the changes, omissions, additions, or other adjustments to the work of the Bid Package as described in the alternate, or are reasonably inferable there from. Claims for extras resulting from changes caused by the acceptance or rejection of any alternate will not be allowed. Alternate Prices shall also include all cost of overhead, profit, and bond premiums associated with the work of the Alternate whether additive or deductive. The Drawings, Specifications, Project Manual, Addendum(s), and other

Contract Documents shall be considered appropriately modified by either the acceptance or rejection of the various Alternatives. The Construction Manager and Owner expressly reserve the right to accept or reject any, or all, Alternate Prices and in any sequence. Acceptance or rejection of any alternate does not relieve the Bidder of timely completion of the Work within the time periods indicated.

Add Alternate No. 1 (Locker Room) – See Drawings Volume 2 Alternate No. 1

All work to rooms 115,116, 117,118

Add Alternate No. 2 (History Corridor)– See Drawings Volume 2 Alternate No. 2

All work to rooms 109, 110,119,120,121,122, Corridor Outside of Locker Rooms

**Deduct Alternate No. 3 (Drop Off Canopy Reduction) – See Drawings Volume 2
Alternate No. 3**

Revise layout of entry canopy.

Deduct Alternate No. 4 (Delete Tunnel) – See Drawings Volume 2 Alternate No. 4

Delete all work to Connector 112, Atrium 111, Elevator 1 and 2,
Mechanical Room 124, Storage 123

Bid Package – #09E – Paints

Description of Work

In general, this Bid Package is comprehensive to specific CSI Division Work and related Work as referenced, indicated on, or implied by the Project Drawings, Specifications and Project Manual. Subcontractor acknowledges that the following Scope of Work detail is provided as a complementary document and must be used in conjunction with all Project Documents. Scope of Work listed is not intended to describe a complete and final work scope. It is provided as a summary overview only.

The scope of the work is identified in the following Specification(s) and further described below:

Specification	Description
Division 00 (All)	Procurement and Contracting Requirements
Division 01 (All)	General Requirements
09 91 13	Exterior Painting
09 91 23	Interior Painting
09 94 00	Decorative Metal Finish
09 96 00	High Performance Coating

Scope of Work Summary/Inclusions:

It is understood and agreed that this **Painting** package includes all inclusions as described in the following subparagraphs regardless of whether or not they are included in the above specifications or any other specification section or shown on the plans:

Trade Specific Requirements:

1. This Subcontractor shall provide a complete painting system package that includes, but is not limited to the following items: paint gypsum wallboard walls, ceilings, soffits, and bulkheads; *paint exposed interior CMU*; paint exposed interior concrete walls; paint hollow metal doors, door frames, and window frames; paint exposed surfaces of steel pan stairs and railings (handrails; guardrails); Brackets and underside of stairs paint unfinished MEP/FP items required to be field painted in MEP/FP specifications; paint exposed exterior CMU, structural steel; paint exterior railings; paint exterior angle lintels; paint exterior steel pipe bollards; provide concrete floor sealer; etc. as may be required to provide a complete and functional painting system, whether detailed and/or implied on the Contract Documents, this Subcontractor is responsible for providing that item. Provide all temporary protections and masking required to protect other surfaces.
2. Provide all interior and exterior paintings required by the Contract Documents, including specialty coatings, epoxy, concrete sealers and special finishes if required.
3. Provide concrete sealers on slabs, including any required cleaning, surface preparation.
4. Provide stain and finish any millwork / casework, wood trim, and/or wood doors that are not furnished pre-finished.
5. Include caulking between painted to nonpainted surfaces and between painted-to-painted surfaces.
6. All exterior paintings include hollow metal doors and frames, lintels, exposed steel, pipe bollards, rails, downspout boots, ladders, grilles, floor lines and all other related items.

7. Include caulking of interior dissimilar material transitions of all painted surfaces. This includes, but not limited to, door frames, painted trim.
8. Provide fit and finish caulking at acoustical ceiling wall mold where gaps between the wall and wall mold result due to imperfections in the wall surface.
9. Include painting of exposed steel decking, mechanical, electrical, plumbing, and sprinkler work as indicated and/or required. This Subcontractor shall include any prep work or priming of steel or MEP/FP materials that have galvanized coatings to which paint will not adhere. All surfaces must carry painting warranties as specified.
10. Provide painting of exposed mechanical, electrical, plumbing and sprinkler work as required. Refer to Specification Divisions 15, 26, etc. for requirements.
11. Coordinate painting of exposed, high ceiling work. Protection from overspray and all associated clean-up is the responsibility of this Bid Package.
12. Clean any overspray or paint on items not scheduled to be painted at once after painting.
13. Refer to Contract Documents for general location, color, and finish materials for items scheduled to receive paint. Notify Monteith Construction of any item where a paint color is not specified so that a proper paint color can be selected by the architect and in enough time to meet the project schedule's requirements.
14. Include all surface preparation and cleaning as necessary for painting, including surface abrasion, sanding, and scraping. Review substrates at areas to be painted at least (2) weeks prior to the scheduled start of work for each area. Immediately notify the Construction Manager in writing of any unacceptable substrates, allowing adequate time for corrective work to be performed prior to the scheduled start of your work in that area. Start of work indicates acceptance of substrate conditions and full responsibility for completed work. Re-priming of areas requiring substrate repairs after acceptance of substrate condition will be by the Painting Subcontractor regardless of timing. Repainting of areas not achieving acceptable finish results shall be redone at the Painting Subcontractor's expense.
15. Provide mock-ups as required for work under this Bid Package. The Painting Subcontractor shall coordinate with the Masonry Subcontractor to provide a mock-up of a masonry wall with block filler applied for review of acceptable finish standards by the Architect before starting block fill work. Once block filler is installed on masonry walls, the Masonry Subcontractor must point up walls. The Painting Subcontractor must block fill any pointed areas prior to final surface paint applications.
16. This Subcontractor shall include all miscellaneous touch up of walls occurring between prime coat and finish coat and must obtain the consensus of Monteith Construction prior to beginning final coat. The final paint coat shall be installed after the flooring and ceilings are in place. The Painting Subcontractor shall include minor touch-up of drywall partitions and ceilings (i.e. small nicks shall be repaired by the Painting Subcontractor).
17. Provide all labor and materials required to fill in minor dents in hollow metal doors and frames including sanding smooth to be ready for final finish paint. Notify the Construction Manager if any frames are damaged beyond minor Bondo work.
18. Prepare ferrous metal surfaces prior to starting painting operations. Solvent cleans all galvanized and aluminum surfaces scheduled to receive paint. Finishes on wood and metal surfaces to be sanded between coats to assure smoothness and adhesion of subsequent coats.

19. The Painting Subcontractor shall verify that the moisture content of all surfaces receiving paint are within the paint manufacturer's acceptable limits.
20. This Subcontractor shall adhere strictly to the number of coats of all fillers, primers, and paints as indicated in the specifications. Larger thicknesses in fewer coats will not be accepted.
21. This subcontractor to scarify, clean, and prime existing block that has been painted to properly receive new paint. In place mock-up to confirm adhesion will be done prior to start of work.
22. Provide wall stenciling at all rated wall assemblies. Others will fire, smoke caulking and sealants.
23. Field application inside the weatherproofing system verify 90 percent of paints and coatings comply with the requirements of *California Department of Public Health's* [Standard Method for the testing and evaluation of VOC content]
24. Interior/Exterior Primers latex block filler with Water based, high solids, emulsion coating formulated to bridge and fill porous surfaces of exterior concrete masonry units in preparation for coatings
25. The subcontractor will sequence work and allow for point up and installation of finishes, millwork, doors, etc. as needed. The subcontractor will allow time for other contractors to do all necessary point up/and installation of all finishes right after primer is applied and right after 1st coat of finish is applied. Subcontractor responsible for protecting all surfaces from paint as required. All protection should be removed after completion.
27. Subcontractor responsible for protecting fire sprinklers, smoke detectors, light fixtures, restroom accessories, flooring, ceiling, etc. as needed. Removal all protection after completion of final coats of paint.
28. Paint application should be done when surface temperature to be painted and ambient air temperatures are between 50- and 95-degrees F and when humidity is lower than 85%
29. For preparation and installation please refer to specifications.
30. All paint must adhere to the allowable VOC content outlined in the specifications
31. Sustainable Design requirement: for each products subcontractor to provide Product data and Test Report showing VOC content, Environmental and Health Product Declaration, sourcing of raw material (post and pre-consumer percentages) and manufacturer inventory. Refer to specification
32. Include an allowance of \$15,000 for paint touch up
33. **Include painting of exposed ceiling on ground level in precast parking structure per drawing A.121**

Schedule Requirements:

Time is of the Essence:

Due to the nature of the Community College Facility and the extreme cost of delayed delivery of the project, every effort shall be made by the Subcontractor to meet or improve upon the scheduled durations and dates provided below. The subcontractor shall contract with material suppliers, manufacturers, or vendors that can supply materials or labor as required per schedule. Additionally, the subcontractor has included, in their base bid, sufficient workforce to achieve agreed-on dates and concurrent workflows as required to complete the project on, or ahead of, schedule.

Schedule Requirements:

TIME IS OF THE ESSENCE

Due to the nature of the project and the extreme cost of delayed delivery of the project, every effort shall be made by the Subcontractor to meet or improve upon the scheduled durations and dates provided below. The subcontractor shall contract with material suppliers, manufacturers, or vendors that have adequate capacity to supply materials or labor as required per schedule. Additionally, the subcontractor has included, in their base bid, sufficient manpower to achieve the below dates and concurrent workflows as required to complete the project on, or ahead of, schedule.

The below schedule requirements are contractually binding for durations of activities indicated. The dates associated with each activity are subject to change based on coordination with other trades, however durations shall remain constant.

1. *Submittals and Shop Drawings:*
 - Shop Drawings: 6 weeks to submit
 - Drawings Approval: 2 week for review:

Allowances and Unit Prices:

Lump sum and quantity allowances, when included, are to be utilized only when authorized, in writing, by the Construction Manager. Allowances are in addition to the requirements stated in this bid package or contract documents and are not to be used for costs associated with the required scope of work. All allowances are to be carried in the base bid.

Lump Sum Allowances:

Lump Sum Allowances are those listed herein with fixed dollar amounts and are representative of the direct cost of the work performed. As such, overhead and profit is included in the base contract. In the event that a lump sum allowance is not utilized in full, applicable markups will be deducted from the remaining contract amount. Should the fixed dollar amount allowance be exceeded in the execution of the work as directed by Monteith, the subcontract will be increased by the direct cost of work plus overhead and profit as outlined in the General Conditions of the Contract. Utilization of a lump sum allowance is based on established unit rates, or on a time and material basis where Unit Prices are not specified.

Quantity Allowances:

Quantity allowances, when included, are to be carried at the quantity specified and a unit rate provided for each distinct unit requested in addition to the quantities required per contract documents. Reconciliation of quantity allowances will be based on agreed upon unit rates. All unutilized allowances will be deducted from the subcontract amount at the completion of this Scope of Work. The Unit Price may also be used to increase the contract sum as required or authorized by Monteith. Unit prices shall include all costs, benefits, overhead and fees. Total cost of quantity allowances are to be stated on bid forms.

A summary of allowances are as follows:

Lump Sum Allowances:

1. Include an allowance of \$15,000 for paint touch up

Quantity Allowances:

1. N/A

Alternates:

Alternates listed in the bid documents shall be carefully reviewed for impacts to the scope of this bid package. Alternate Prices shall include all costs associated with the changes, omissions, additions, or other adjustments to the work of the Bid Package as described in the alternate, or are reasonably inferable there from. Claims for extras resulting from changes caused by the acceptance or rejection of any alternate will not be allowed. Alternate Prices shall also include all cost of overhead, profit, and bond premiums associated with the work of the Alternate whether additive or deductive. The Drawings, Specifications, Project Manual, Addendum(s), and other Contract Documents shall be considered appropriately modified by either the acceptance or rejection of the various Alternatives. The Construction Manager and Owner expressly reserve the right to accept or reject any, or all, Alternate Prices and in any sequence. Acceptance or rejection of any alternate does not relieve the Bidder of timely completion of the Work within the time periods indicated.

Add Alternate No. 1 (Locker Room) – See Drawings Volume 2 Alternate No. 1

All work to rooms 115,116, 117,118

Add Alternate No. 2 (History Corridor)– See Drawings Volume 2 Alternate No. 2

All work to rooms 109, 110,119,120,121,122, Corridor Outside of Locker Rooms

**Deduct Alternate No. 3 (Drop Off Canopy Reduction) – See Drawings Volume 2
Alternate No. 3**

Revise layout of entry canopy.

Deduct Alternate No. 4 (Delete Tunnel) – See Drawings Volume 2 Alternate No. 4

Delete all work to Connector 112, Atrium 111, Elevator 1 and 2,
Mechanical Room 124, Storage 123

Bid Package – #21A – Fire Suppression

Description of Work

In general, this Bid Package is comprehensive to specific CSI Division Work and related Work as referenced, indicated on, or implied by the Project Drawings, Specifications and Project Manual. Subcontractor acknowledges that the following Scope of Work detail is provided as a complementary document and must be used in conjunction with all Project Documents. Scope of Work listed is not intended to describe a complete and final work scope. It is provided as a summary overview only.

The scope of the work is identified in the following Specification(s) and further described below:

Specification	Description
Division 00 (All)	Procurement and Contracting Requirements
Division 01 (All)	General Requirements
21 10 00	Fire-Suppression Standpipes
02 41 19	Selective Demolition

Scope of Work Summary/Inclusions:

It is understood and agreed that this **Fire Suppression** package includes all inclusions as described in the following subparagraphs regardless of whether or not they are included in the above specifications or any other specification section or shown on the plans:

Trade Specific Requirements:

1. Provide all labor, material, equipment and services for proper completion and operation of the fire protection systems. This will include fully designed systems sealed by a registered professional engineer or the NICET Level III designer for system drawings and hydraulic calculations as required by the State of North Carolina General Statutes.
2. Although work is not specifically shown or specified, subcontract is to provide a complete design with all devices, materials obviously necessary for a complete installation. This includes but is not limited to fire pumps, jockey pumps, remote alarm panel annunciator, drivers, controllers, accessories, pressure-maintenance pump and controllers, electric motor drives, horizontal fire pumps, multistage pressure-maintenance pumps, pump controllers/alarm panels and flow-measuring systems.
3. Participate in BIM coordination and provide models necessary for a fully coordinated system.

Project Specific Scope of Work Inclusions:

The following is provided as a courtesy and is not intended to fully represent the scope of work required per plans and specifications. Drawing references are intended to be references to similar details relevant to the scope and may not be limited to the details referenced.

1. Division 21 Contractor shall furnish all motor starters and disconnect switches as required by NEC for motors, unless specifically noted otherwise in the specifications or on the drawings.
2. System design should be in accordance with North Carolina State Building Codes and NFPA.

3. System design and construction to adhere to NFPA 13, 14, 20, 24 and 70 and the NCDOT requirements.
4. System to be in accordance with ANSI, ASTM, UL and FM Global insurance requirements.
5. All exposed piping within finished areas shall be painted to match the adjacent surfaces.
6. Sleeves and firestopping at penetrations are included in this scope as required. If UL details or engineering judgements are not found in the documents, the subcontractor will obtain them.
7. Flow data shown on the drawings is calculated by hydraulic model provided by others. Site piping is not currently installed. The subcontractor is to have a flow test performed of the design hydrant once site work is complete. See Civil Drawings for hydrant location and pipe routing to the building.
8. Integrate system with the building fire and smoke alarm system.
9. Provide fire department connections as indicated on the Drawings.
10. Masking off and protection of sprinkler heads is the responsibility of this bid package.
11. All sprinkler heads in lay-in or gypsum ceilings shall have concealed type unless noted otherwise. All sprinkler heads in spaces without a ceiling shall be upright pendant with cages as required.
12. Route Sprinklers in insulated section canopy/green roof and provide dry type sprinkler heads.
13. Provide concrete housekeeping pads for all pumps and other equipment, as necessary.
14. Provide additional heads as required under >48" obstructions.
15. Provide high and low sprinkler head where drop ceilings obstruct sprinkler, but above ceiling space is open to below.
16. Provide a minimum of 3 phased hydrostatic testing with isolation of individual floors prior to completion of the whole building system.
17. Provide primary test drain with overflow drain cover as detailed.
18. Provide additional drain down locations as required due to coordination of piping elevations with structure and other trades.
19. Include all standpipes to parking deck.

Schedule Requirements:

TIME IS OF THE ESSENCE

Due to the nature of the project and the extreme cost of delayed delivery of the project, every effort shall be made by the Subcontractor to meet or improve upon the scheduled durations and dates provided below. The subcontractor shall contract with material suppliers, manufacturers, or vendors that have adequate capacity to supply materials or labor as required per schedule. Additionally, the subcontractor has included, in their base bid, sufficient manpower to achieve the below dates and concurrent workflows as required to complete the project on, or ahead of, schedule.

The below schedule requirements are contractually binding for durations of activities indicated. The dates associated with each activity are subject to change based on coordination with other trades, however durations shall remain constant.

1. *Submittals and Shop Drawings:*

- Shop Drawings: 12 weeks
- Drawings Approval: 3 week for review:

Allowances and Unit Prices:

Lump sum and quantity allowances, when included, are to be utilized only when authorized, in writing, by the Construction Manager. Allowances are in addition to the requirements stated in this bid package or contract documents and are not to be used for costs associated with the required scope of work. All allowances are to be carried in the base bid.

Lump Sum Allowances:

Lump Sum Allowances are those listed herein with fixed dollar amounts and are representative of the direct cost of the work performed. As such, overhead and profit is included in the base contract. In the event that a lump sum allowance is not utilized in full, applicable markups will deducted from the remaining contract amount. Should the fixed dollar amount allowance be exceeded in the execution of the work as directed by Monteith, the subcontract will be increased by the direct cost of work plus overhead and profit as outlined in the General Conditions of the Contract. Utilization of a lump sum allowance is based on established unit rates, or on a time and material basis where Unit Prices are not specified.

Quantity Allowances:

Quantity allowances, when included, are to be carried at the quantity specified and a unit rate provided for each distinct unit requested in addition to the quantities required per contract documents. Reconciliation of quantity allowances will be based on agreed upon unit rates. All unutilized allowances will be deducted from the subcontract amount at the completion of this Scope of Work. The Unit Price may also be used to increase the contract sum as required or authorized by Monteith. Unit prices shall include all costs, benefits, overhead and fees. Total cost of quantity allowances are to be stated on bid forms.

A summary of allowances are as follows:

Lump Sum Allowances:

1. N/A

Quantity Allowances:

1. N/A

Alternates:

Alternates listed in the bid documents shall be carefully reviewed for impacts to the scope of this bid package. Alternate Prices shall include all costs associated with the changes, omissions, additions, or other adjustments to the work of the Bid Package as described in the alternate, or are reasonably inferable there from. Claims for extras resulting from changes caused by the acceptance or rejection of any alternate will not be allowed. Alternate Prices shall also include all cost of overhead, profit, and bond premiums associated with the work of the Alternate whether additive or deductive. The Drawings, Specifications, Project Manual, Addendum(s), and other

Contract Documents shall be considered appropriately modified by either the acceptance or rejection of the various Alternatives. The Construction Manager and Owner expressly reserve the right to accept or reject any, or all, Alternate Prices and in any sequence. Acceptance or rejection of any alternate does not relieve the Bidder of timely completion of the Work within the time periods indicated.

Add Alternate No. 1 (Locker Room) – See Drawings Volume 2 Alternate No. 1

All work to rooms 115,116, 117,118

Add Alternate No. 2 (History Corridor)– See Drawings Volume 2 Alternate No. 2

All work to rooms 109, 110,119,120,121,122, Corridor Outside of Locker Rooms

**Deduct Alternate No. 3 (Drop Off Canopy Reduction) – See Drawings Volume 2
Alternate No. 3**

Revise layout of entry canopy.

Deduct Alternate No. 4 (Delete Tunnel) – See Drawings Volume 2 Alternate No. 4

Delete all work to Connector 112, Atrium 111, Elevator 1 and 2,
Mechanical Room 124, Storage 123

Bid Package – #22A Plumbing

Description of Work

In general, this Bid Package is comprehensive to specific CSI Division Work and related Work as referenced, indicated on, or implied by the Project Drawings, Specifications and Project Manual. Subcontractor acknowledges that the following Scope of Work detail is provided as a complementary document and must be used in conjunction with all Project Documents. Scope of Work listed is not intended to describe a complete and final work scope. It is provided as a summary overview only.

The scope of the work is identified in the following Specification(s) and further described below:

Specification	Description
Division 00 (All)	Procurement and Contracting Requirements
Division 01 (All)	General Requirements
Division 22 (In its entirety)	Plumbing
02 41 19	Selective Demolition

Scope of Work Summary/Inclusions:

It is understood and agreed that this **Plumbing** package includes all inclusions as described in the following subparagraphs regardless of whether or not they are included in the above specifications or any other specification section or shown on the plans:

Trade Specific Requirements:

1. Provide all labor, material, surveying/layout, equipment and services for proper completion and operation of a fully functional gas system, domestic water system, sanitary waste and vent system, and storm water collection system.
2. Although work is not specifically shown or specified, subcontractor is to provide all equipment, accessories, fixtures (water closets, urinals, lavatories, sinks, mop receptors, electric water coolers, safety equipment and emergency shower/eye-face water tempering system, materials, and labor obviously necessary for a complete installation. This includes but is not limited to cleanouts, floor drains/floor sinks, hub drains, bin drains, roof drains, downspout nozzles, hose bibbs, wall hydrants, post hydrants, backflow prevention devices, double check valves assembly, flow meters, water hammer arrestors, pressure gauges, thermometers, gas pressure regulators, domestic water pressure regulating valves, domestic water heaters, boilers, circulating pumps, expansion tanks, storage tanks, ice maker outlet boxes, trap primers, dishwasher boxes, pipe/equipment/valve identification, and painting of piping as specified.
3. Participate in BIM coordination and provide models necessary for a fully coordinated system.
4. The gas system will begin at PNG gas riser/meter assembly.
5. Provide concrete housekeeping pads for all pumps and other equipment, as necessary.
6. Provide sleeves and firestopping for all penetrations through rated walls, floors, or ceilings. This includes UL details or engineering judgements to match each condition not found in the documents.

7. Provide caulking and sealants from plumbing fixtures to all adjacent finishes.
8. Include for all cutting and patching of existing surfaces.
9. Include all plumbing demolition.
10. Provide fire-stopping, putty pads for all work installed under this Bid Package.

Schedule Requirements:

TIME IS OF THE ESSENCE

Due to the nature of the project and the extreme cost of delayed delivery of the project, every effort shall be made by the Subcontractor to meet or improve upon the scheduled durations and dates provided below. The subcontractor shall contract with material suppliers, manufacturers, or vendors that have adequate capacity to supply materials or labor as required per schedule. Additionally, the subcontractor has included, in their base bid, sufficient manpower to achieve the below dates and concurrent workflows as required to complete the project on, or ahead of, schedule.

The below schedule requirements are contractually binding for durations of activities indicated. The dates associated with each activity are subject to change based on coordination with other trades, however durations shall remain constant.

1. *Submittals and Shop Drawings:*
 - Shop Drawings: 8 weeks
 - Drawings Approval: 3 weeks for review:

Allowances and Unit Prices:

Lump sum and quantity allowances, when included, are to be utilized only when authorized, in writing, by the Construction Manager. Allowances are in addition to the requirements stated in this bid package or contract documents and are not to be used for costs associated with the required scope of work. All allowances are to be carried in the base bid.

Lump Sum Allowances:

Lump Sum Allowances are those listed herein with fixed dollar amounts and are representative of the direct cost of the work performed. As such, overhead and profit is included in the base contract. In the event that a lump sum allowance is not utilized in full, applicable markups will deducted from the remaining contract amount. Should the fixed dollar amount allowance be exceeded in the execution of the work as directed by Monteith, the subcontract will be increased by the direct cost of work plus overhead and profit as outlined in the General Conditions of the Contract. Utilization of a lump sum allowance is based on established unit rates, or on a time and material basis where Unit Prices are not specified.

Quantity Allowances:

Quantity allowances, when included, are to be carried at the quantity specified and a unit rate provided for each distinct unit requested in addition to the quantities required per contract documents. Reconciliation of quantity allowances will be based on agreed upon

unit rates. All unutilized allowances will be deducted from the subcontract amount at the completion of this Scope of Work. The Unit Price may also be used to increase the contract sum as required or authorized by Monteith. Unit prices shall include all costs, benefits, overhead and fees. Total cost of quantity allowances are to be stated on bid forms.

A summary of allowances are as follows:

Lump Sum Allowances:

1. N/A

Quantity Allowances:

1. N/A

Alternates:

Alternates listed in the bid documents shall be carefully reviewed for impacts to the scope of this bid package. Alternate Prices shall include all costs associated with the changes, omissions, additions, or other adjustments to the work of the Bid Package as described in the alternate, or are reasonably inferable there from. Claims for extras resulting from changes caused by the acceptance or rejection of any alternate will not be allowed. Alternate Prices shall also include all cost of overhead, profit, and bond premiums associated with the work of the Alternate whether additive or deductive. The Drawings, Specifications, Project Manual, Addendum(s), and other Contract Documents shall be considered appropriately modified by either the acceptance or rejection of the various Alternatives. The Construction Manager and Owner expressly reserve the right to accept or reject any, or all, Alternate Prices and in any sequence. Acceptance or rejection of any alternate does not relieve the Bidder of timely completion of the Work within the time periods indicated.

Add Alternate No. 1 (Locker Room) – See Drawings Volume 2 Alternate No. 1

All work to rooms 115,116, 117,118

Add Alternate No. 2 (History Corridor)– See Drawings Volume 2 Alternate No. 2

All work to rooms 109, 110,119,120,121,122, Corridor Outside of Locker Rooms

Deduct Alternate No. 3 (Drop Off Canopy Reduction) – See Drawings Volume 2 Alternate No. 3

Revise layout of entry canopy.

Deduct Alternate No. 4 (Delete Tunnel) – See Drawings Volume 2 Alternate No. 4

Delete all work to Connector 112, Atrium 111, Elevator 1 and 2, Mechanical Room 124, Storage 123

Bid Package – #23A Heating, Ventilating and Air Conditioning

Description of Work

In general, this Bid Package is comprehensive to specific CSI Division Work and related Work as referenced, indicated on, or implied by the Project Drawings, Specifications and Project Manual. Subcontractor acknowledges that the following Scope of Work detail is provided as a complementary document and must be used in conjunction with all Project Documents. Scope of Work listed is not intended to describe a complete and final work scope. It is provided as a summary overview only.

The scope of the work is identified in the following Specification(s) and further described below:

Specification	Description
Division 00 (All)	Procurement and Contracting Requirements
Division 01 (All)	General Requirements
Division 23 (In its entirety)	Heating, Ventilating, and Air Conditioning
02 41 19	Selective Demolition

Scope of Work Summary/Inclusions:

It is understood and agreed that this **Heating, Ventilation, and Air Conditioning** package includes all inclusions as described in the following subparagraphs regardless of whether or not they are included in the above specifications or any other specification section or shown on the plans:

Trade Specific Requirements:

1. Provide mechanical systems complete and operable per applicable codes and as indicated on drawings, specifications, and the below exhibit B requirements.
2. Participate in BIM coordination and provide models necessary for a fully coordinated system.
3. Provide all curb rails, pitch pockets, etc. as required for rooftop equipment.
4. Provide labeling for all equipment, disconnects, piping, ductwork, valves, etc. for all equipment supplied as part of this package. Adhere to all labeling and color-coding requirements per the contract documents.
5. Include coordination with Building Envelope and Function commissioning requirements including:
 - a. All forms and checklists are to be entered in the web-based commissioning platform. Construction Manager to provide platform access throughout the project's duration to a single designated employee of the subcontractor.
 - b. Completion of pre-functional checklists
 - c. Attendance at all commissioning coordination meetings
 - d. Startup technician and controls representative presents for all functional testing
 - e. All tools, test equipment, and instruments required to execute startup, checkout, calibration, and functional performance testing of all equipment.
 - f. Manufacturer start-up and commissioning/testing as required
 - g. Pre-functional performance testing and documentation
 - h. TAB Verification

6. Includes firestopping of all penetrations through rated partitions, escutcheons, or neatly trimmed/sealed penetrations through nonrated partitions in exposed ceilings, acoustical sealants through all partitions.

7. All exterior wall penetrations are to be neatly cut or drilled to allow for waterproofing of annular space by waterproofing contractor. Any penetrations made after completion of air barriers, transition membranes, and sealing of penetrations by the waterproofing contractor will be sealed by this contractor.

8. All supports, hangers, sleeves, struts, etc. must be installed before fireproofing application. If hangers or support installation is required after fireproofing, all patching costs associated are this contractor's responsibility.

9. Provide a complete ductwork and air distribution system including but not necessarily limited to the following:

- a. Metal ductwork, fittings, flanges, hangers, supports, sealants, taps, saddles, etc.
- b. All gr Sufficient balancing dampers as shown or as required for Test and Balance of system.
- c. Flexible joints and isolations at connections specified.
- d. all duct insulation
- e. spiral duct
- f. Fire and smoke damper access doors
- g. grills and diffusers as shown or required for complete system

1. This Subcontractor shall provide complete test and balance of mechanical systems that includes but is not limited to the following items: providing all labor, material, equipment, and hoisting necessary and/or incidental as required to complete the scope of work identified in the Construction Documents.

- a. Perform testing, adjusting, and balancing for all HVAC and domestic water systems.
- b. Perform a complete design review of the Construction Documents, shop drawings, and submittal information for discrepancies.
- c. Perform testing and adjusting for pressurization from space to space with complete documentation.
- d. Coordinate testing requirements and reports with the Mechanical, Electrical Subcontractor, and Commissioning Agent.
- e. Use test instruments that have been calibrated within a time as recommended by the certifying agency or the manufacturer, whichever is more recent. Instruments shall be checked for accuracy before testing, adjusting, and balancing activity starts. The Subcontractor shall handle the testing of the test instruments used to perform this work and shall give a complete list of instruments it proposes for approval. The list shall include the manufacturer's name, model, and serial number of each instrument and copies of calibration certificates prior to beginning work. No work shall begin until the list has been approved by Monteith Construction. Re-measurement of air distribution devices shall be carried out utilizing the same instruments used in the original balance report.

- f. Measure up to ten percent (10%) of air distribution devices (or more if required by Commissioning) in the presence of the Owner, Commissioning Agent, Architect, Engineers, and Monteith Construction to prove the final balance report is correct.
- g. Submit the final balancing report for approval. Promptly address all listed deficient items including re-balancing, as necessary. Resubmit a revised final report if required. This process shall be repeated at the Subcontractor's expense until the report is accepted by the Architect and Engineers without corrections needed.
- h. Include the cost to replace sheaves and belts required for correct balance.
- i. Participate in and provide guidance during the development of coordination drawings. Find and locate where additional dampers, valves, etc. are needed for proper execution of this scope of work.
- j. Provide all platform ladders, scaffolding, and other means to access required areas.
 - 2. Includes installation of all ducts mounted smoke detectors.
 - 3. Review electrical drawings closely to verify power shown to be provided for equipment furnished by this bid package is adequate. If equipment furnished requires different power than that shown on the electrical drawings, the cost to revise power is the responsibility of this bid package.
 - 4. Includes all condensate and refrigerant piping for equipment in this bid package.
 - 5. Includes all fire and smoke dampers as required.
 - 6. Blocking / backing is provided by the Drywall Subcontractor. Submit blocking / backing requirements and location drawings to the Drywall Subcontractor. Blocking / backing that is not submitted will be the responsibility of this Bid Package.
 - 7. Provide bases, curbs, and concrete pads associated with this scope of work.
 - 8. Provide bracing, framing, support, and anchorage of work in this package as required for structural attachment, wind-loading requirements, and all governing codes and requirements. Steel and miscellaneous metals shown and sized on the structural drawings will be provided by the Structural Steel and Miscellaneous Metals Subcontractor. Any additional or supplemental requirements are the responsibility of this Bid Package. Provide hanger wires where required to support diffusers, devices, etc.
- 9. All ductwork materials to be stored off the ground and open ends of ductwork protected from contamination or dust
 - 10. Building HVAC system will be used during construction, and this subcontractor will provide any required filter media at return air grills, plenum openings, or unit filters to protect units from contamination. The CMAR will advise MC of any upcoming heavy dust generating activities so units can be temporarily brought offline until cleanup is complete. This subcontractor shall assume that final building fire alarm system will not be active for all or part of the duration of temporary conditioning with permanent units and shall make provisions as necessary to allow for use of the units 24/7 during this time.
 - 11. Provide temporary filter media throughout construction and maintain on a regular basis or as directed by CM. maintain logs of replacement of filters with dates, time, and photos.

12. Provide a clean set of MERV filters at all units prior to TAB and commissioning activities.
13. Include all cutting and patching of surfaces.
14. Include all demolition work as required by drawings.
15. Provide caulking, sealants, fire-stopping, putty pads for all work installed under this Bid Package.

Schedule Requirements:

TIME IS OF THE ESSENCE

Due to the nature of the project and the extreme cost of delayed delivery of the project, every effort shall be made by the Subcontractor to meet or improve upon the scheduled durations and dates provided below. The subcontractor shall contract with material suppliers, manufacturers, or vendors that have adequate capacity to supply materials or labor as required per schedule. Additionally, the subcontractor has included, in their base bid, sufficient manpower to achieve the below dates and concurrent workflows as required to complete the project on, or ahead of, schedule.

The below schedule requirements are contractually binding for durations of activities indicated. The dates associated with each activity are subject to change based on coordination with other trades, however durations shall remain constant.

1. *Submittals and Shop Drawings:*
 - Shop Drawings: 12 weeks
 - Drawings Approval: 3 week for review:

Allowances and Unit Prices:

Lump sum and quantity allowances, when included, are to be utilized only when authorized, in writing, by the Construction Manager. Allowances are in addition to the requirements stated in this bid package or contract documents and are not to be used for costs associated with the required scope of work. All allowances are to be carried in the base bid.

Lump Sum Allowances:

Lump Sum Allowances are those listed herein with fixed dollar amounts and are representative of the direct cost of the work performed. As such, overhead and profit is included in the base contract. In the event that a lump sum allowance is not utilized in full, applicable markups will deducted from the remaining contract amount. Should the fixed dollar amount allowance be exceeded in the execution of the work as directed by Monteith, the subcontract will be increased by the direct cost of work plus overhead and profit as outlined in the General Conditions of the Contract. Utilization of a lump sum allowance is based on established unit rates, or on a time and material basis where Unit Prices are not specified.

Quantity Allowances:

Quantity allowances, when included, are to be carried at the quantity specified and a unit rate provided for each distinct unit requested in addition to the quantities required per contract documents. Reconciliation of quantity allowances will be based on agreed upon

unit rates. All unutilized allowances will be deducted from the subcontract amount at the completion of this Scope of Work. The Unit Price may also be used to increase the contract sum as required or authorized by Monteith. Unit prices shall include all costs, benefits, overhead and fees. Total cost of quantity allowances are to be stated on bid forms.

A summary of allowances are as follows:

Lump Sum Allowances:

1. N/A

Quantity Allowances:

1. N/A

Alternates:

Alternates listed in the bid documents shall be carefully reviewed for impacts to the scope of this bid package. Alternate Prices shall include all costs associated with the changes, omissions, additions, or other adjustments to the work of the Bid Package as described in the alternate, or are reasonably inferable there from. Claims for extras resulting from changes caused by the acceptance or rejection of any alternate will not be allowed. Alternate Prices shall also include all cost of overhead, profit, and bond premiums associated with the work of the Alternate whether additive or deductive. The Drawings, Specifications, Project Manual, Addendum(s), and other Contract Documents shall be considered appropriately modified by either the acceptance or rejection of the various Alternatives. The Construction Manager and Owner expressly reserve the right to accept or reject any, or all, Alternate Prices and in any sequence. Acceptance or rejection of any alternate does not relieve the Bidder of timely completion of the Work within the time periods indicated.

Add Alternate No. 1 (Locker Room) – See Drawings Volume 2 Alternate No. 1
All work to rooms 115,116, 117,118

Add Alternate No. 2 (History Corridor)– See Drawings Volume 2 Alternate No. 2
All work to rooms 109, 110,119,120,121,122, Corridor Outside of Locker Rooms

Deduct Alternate No. 3 (Drop Off Canopy Reduction) – See Drawings Volume 2 Alternate No. 3
Revise layout of entry canopy.

Deduct Alternate No. 4 (Delete Tunnel) – See Drawings Volume 2 Alternate No. 4
Delete all work to Connector 112, Atrium 111, Elevator 1 and 2, Mechanical Room 124, Storage 123

Bid Package – #26A – Electrical

Description of Work

In general, this Bid Package is comprehensive to specific CSI Division Work and related Work as referenced, indicated on, or implied by the Project Drawings, Specifications and Project Manual. Subcontractor acknowledges that the following Scope of Work detail is provided as a complementary document and must be used in conjunction with all Project Documents. Scope of Work listed is not intended to describe a complete and final work scope. It is provided as a summary overview only.

The scope of the work is identified in the following Specification(s) and further described below:

Specification	Description
Division 00 (All)	Procurement and Contracting Requirements
Division 01 (All)	General Requirements
Division 26 (In its entirety)	Electrical
Division 27 (In its entirety)	Communications
Division 28 (In its entirety)	Electronic Safety and Security
Section 02 41 19	Selective Demolition

Scope of Work Summary/Inclusions:

It is understood and agreed that this **Electrical** package includes all inclusions as described in the following subparagraphs regardless of whether or not they are included in the above specifications or any other specification section or shown on the plans:

Trade Specific Requirements:

1. This Subcontractor shall provide all electrical, audio visual, and security systems including parking lots, roadways, walkways, entrance and exit plazas, temporary canopies, temporary walkways, and the Admin Building.
2. This Subcontractor shall provide all electrical fixtures, poles, bases, handholes, equipment, devices, rough in materials, conduit, boxes, trims, fixtures, switchboards, disconnecting means, etc. as required for a full and complete electrical score of work.
3. Include all conduit, boxes, and cabling for Telecom, AV, and security scopes.
4. Include all concrete encased conduit and duct bank as part of this bid package.
5. Provide all pole bases, housekeeping and equipment pads as needed for installation of equipment in this bid package. Reference electrical and structural drawings for pole base and electrical equipment pad requirements.
6. Subcontractor responsible for connecting to existing feeders, transformers, switches and boards as required.
7. Installation and connection of owner provided equipment.

8. Provide all site lighting including lighting poles, roadway acorn lights fixtures, parking lot nautical lights and bollards. This work includes poles, pole bases, drilling and installation of poles, concrete bases, backfill of poles and removal of spoils, installation of lighting, conduit, wiring, terminations, lighting controls, etc.
9. The work of this Bid Package shall include patching and repairs required for existing roadways, paving, walks, and landscaping that are disturbed outside of the construction fencing limits solely for the installation of site electrical work. At a minimum, provide orange construction fencing around all site utility work.
10. Subcontractor responsible for furnishing materials and making electrical connections to all equipment provided and installed in other scope packages as required.
11. Power rough-in, wiring and final connection of all owner-furnished equipment and equipment furnished by others. Coordinate new electrical services with the local utilities, local authorities, Engineer, Owner, and Construction Manager.
12. Provide as-builts at the completion of work.
13. Coordinate any shutdowns and change overs with Construction Manager.
14. Includes all electrical and low voltage demolition. Capping all existing electrical utilities included.
15. Provide all required make safes and disconnects for electrical demolition.
16. Provide concrete base, anchor bolts and hardware for all site electrical lighting.
17. Provide excavation, trenching, trench shoring, backfill, compaction and spoils removal necessary for the work within this package.
18. Provide dewatering necessary for the work within this package.
19. Provide support as required for electrical panels and equipment, including backboards, independent supports, etc.
20. In-wall blocking / backing is provided by the Drywall Subcontractor. Submit blocking / backing requirements and location drawings to the Drywall Subcontractor. Blocking / backing that is not submitted will be the responsibility of this Bid Package.
21. Provide caulking, sealants, fire-stopping, putty pads for all work installed under this Bid Package.
22. Provide color coding and labeling of conduit, boxes, systems, and equipment as required for work within this Bid Package.
23. Provide access doors and handholes as necessary or specified for work within this package.
24. Provide sleeves, block-outs, coring and supports necessary for the work within this package.

25. Furnish sleeves for all masonry or concrete wall penetrations in new construction. The Masonry or concrete Subcontractor is to install. The Electrical Subcontractor is to clearly indicate the exact location for the sleeves and verify location. This contractor is responsible for all cutting and patching if required.
26. Furnish embeds, sleeves, block-outs, back boxes, etc. to be cast in concrete floors and walls to the Cast-In-Place Subcontractor.
27. All raceways and sleeves shall be coordinated with adjacent walls to ensure that all penetrations enter and exit walls at 90 degree angles.
28. Provide testing and system certifications as required.
29. Provide extended warranties as required for use of electrical items during construction.
30. Provide temporary power, wiring, lighting and distribution in accordance with current OSHA requirements. Includes installation, maintenance, and removal. Include temporary power and removal of temporary Power to CM trailer.
31. Attendance at weekly subcontractor meetings by all low voltage, second-tier subcontractors under this Bid Package is required at least two weeks prior to and during their work onsite.
32. This trade contractor is responsible for coordination drawings. See General requirements.
33. Block-outs, embeds, sleeves for penetrations, openings, attachments, etc. will be furnished by this trade for installation in masonry work by Masonry Subcontractor. Include all permanent and/or non-permanent materials required for openings. Elevation and size of penetrations to be written on walls or floors by trade requiring penetration. If penetration/block out is provided and properly coordinated by this trade and not installed per coordination all cutting, coring, or rebuilding of wall is the responsibility of masonry subcontractor. If information given to Masonry contractor is not correct, all costs for cutting, coring, or rebuilding of wall is the responsibility of Electrical subcontractor.

Project Specific Scope of Work Inclusions:

1. Provide all required make safes and disconnects for electrical demolition.
2. Includes a complete electrical, telecom, fire alarm, and security scope for the parking lots, roadways, temporary canopies and walkways, entrance and exit plazas, Bus Shelters, and the new Administration Building per the plans and specifications.
3. Provide all concrete duct bank, conduit, raceways from new or existing transformers to final points of connection.
4. Includes dynamic signage conduit and raceways.
5. Includes field locating of existing feeders and electrical utilities for tie in of new work.

6. Includes all layout for electrical scope of work.
7. Provide and install all pole bases, poles, handholes and covers, grounding rods, pull boxes, junction boxes, conductors, fuses, breakers for existing panels or switches, fixtures and all other items required for a complete and functional system.
8. Provide all lighting controls as indicated.
9. Includes all panels, gear, equipment pads, power and communication racks.
10. Provide grounding and bonding in accordance with bid documents and NEC
11. Provide power and data to any equipment provided by others
12. Provide all site lighting and power as indicated.
13. Provide lineside power to all disconnects, VFDs, equipment, and fixtures.
14. Includes all Electrical Demolition including all light poles, fixtures, light pole foundations, all conduit, and all wiring. Includes de-energizing all entrance/exit plazas for salvage by others.
15. Includes electrical courtyard and communications courtyard concrete slabs, slab stone base, and equipment racks.
16. Includes all cameras and WAP devices.
17. Include all demolition as show on drawings. Maintain any existing systems that are to remain active during construction.
18. Includes power pedestal and communication pedestal including equipment racks and supports and concrete slab.
19. Includes security poles.
20. Includes a complete paging system per the plans and specifications including all speakers.
21. Includes all power required for mechanical equipment.
22. 120- and 240-volt temporary power for project. Provide 240 volts for terrazzo grinding machines.
23. Include all concrete pads for equipment as required.
24. Includes lighting control programmer makes site visit for programing and owner training.
25. embedded conduit and boxes in the parking deck need to be installed by the electrical contractor at the Metromont precast facility.
26. Include Bid Form unit prices per Volume 3 Appendix E – Bid Form
27. Include **\$50,000** allowance for electrical hookup of section 09 05 10 Light Manipulating Materials

Schedule Requirements:

TIME IS OF THE ESSENCE

Due to the nature of the project and the extreme cost of delayed delivery of the project, every effort shall be made by the Subcontractor to meet or improve upon the scheduled durations and dates provided below. The subcontractor shall contract with material suppliers, manufacturers, or vendors that have adequate capacity to supply materials or labor as required per schedule. Additionally, the subcontractor has included, in their base bid, sufficient manpower to achieve the below dates and concurrent workflows as required to complete the project on, or ahead of, schedule.

The below schedule requirements are contractually binding for durations of activities indicated. The dates associated with each activity are subject to change based on coordination with other trades, however durations shall remain constant.

1. *Submittals and Shop Drawings:*
 - Shop Drawings: 12 weeks
 - Drawings Approval: 3 weeks for review:

Allowances and Unit Prices:

Lump sum and quantity allowances, when included, are to be utilized only when authorized, in writing, by the Construction Manager. Allowances are in addition to the requirements stated in this bid package or contract documents and are not to be used for costs associated with the required scope of work. All allowances are to be carried in the base bid.

Lump Sum Allowances:

Lump Sum Allowances are those listed herein with fixed dollar amounts and are representative of the direct cost of the work performed. As such, overhead and profit is included in the base contract. In the event that a lump sum allowance is not utilized in full, applicable markups will be deducted from the remaining contract amount. Should the fixed dollar amount allowance be exceeded in the execution of the work as directed by Monteith, the subcontract will be increased by the direct cost of work plus overhead and profit as outlined in the General Conditions of the Contract. Utilization of a lump sum allowance is based on established unit rates, or on a time and material basis where Unit Prices are not specified.

Quantity Allowances:

Quantity allowances, when included, are to be carried at the quantity specified and a unit rate provided for each distinct unit requested in addition to the quantities required per contract documents. Reconciliation of quantity allowances will be based on agreed upon unit rates. All unutilized allowances will be deducted from the subcontract amount at the completion of this Scope of Work. The Unit Price may also be used to increase the contract sum as required or authorized by Monteith. Unit prices shall include all costs, benefits, overhead and fees. Total cost of quantity allowances are to be stated on bid forms.

A summary of allowances are as follows:

Lump Sum Allowances:

1. Include \$50,000 allowance for electrical hookup of section 09 05 10 Light Manipulating Materials

Quantity Allowances:

1. N/A

Alternates:

Alternates listed in the bid documents shall be carefully reviewed for impacts to the scope of this bid package. Alternate Prices shall include all costs associated with the changes, omissions, additions, or other adjustments to the work of the Bid Package as described in the alternate, or are reasonably inferable there from. Claims for extras resulting from changes caused by the acceptance or rejection of any alternate will not be allowed. Alternate Prices shall also include all cost of overhead, profit, and bond premiums associated with the work of the Alternate whether additive or deductive. The Drawings, Specifications, Project Manual, Addendum(s), and other Contract Documents shall be considered appropriately modified by either the acceptance or rejection of the various Alternatives. The Construction Manager and Owner expressly reserve the right to accept or reject any, or all, Alternate Prices and in any sequence. Acceptance or rejection of any alternate does not relieve the Bidder of timely completion of the Work within the time periods indicated.

Add Alternate No. 1 (Locker Room) – See Drawings Volume 2 Alternate No. 1
All work to rooms 115,116, 117,118

Add Alternate No. 2 (History Corridor)– See Drawings Volume 2 Alternate No. 2
All work to rooms 109, 110,119,120,121,122, Corridor Outside of Locker Rooms

Deduct Alternate No. 3 (Drop Off Canopy Reduction) – See Drawings Volume 2 Alternate No. 3
Revise layout of entry canopy.

Deduct Alternate No. 4 (Delete Tunnel) – See Drawings Volume 2 Alternate No. 4
Delete all work to Connector 112, Atrium 111, Elevator 1 and 2, Mechanical Room 124, Storage 123

Bid Package – #31A – Sitework (Earthwork & Utility)

Description of Work

In general, this Bid Package is comprehensive to specific CSI Division Work and related Work as referenced, indicated on, or implied by the Project Drawings, Specifications and Project Manual. Subcontractor acknowledges that the following Scope of Work detail is provided as a complementary document and must be used in conjunction with all Project Documents. Scope of Work listed is not intended to describe a complete and final work scope. It is provided as a summary overview only.

The scope of the work is identified in the following Specification(s) and further described below:

Specification	Description
Division 01	Special Provisions
Item C-100	Contract Quality Control Program
31 20 00	Earth Moving
31 23 19	Dewatering
31 50 00	Excavation Support and Protection
31 23 34.01	Excavating , Trenching, Dewatering and Backfilling For Utility Work
33 01 12	Identification for Utilities Piping
33 01 30.86	Manhole Rim Adjustments
33 05 05.31	Hydrostatic Testing
33 05 13	Precast Concrete Manholes and Utility Structures
33 14 13	Water Distribution Piping, Valves, Hydrants
33 14 14	Public Water Service Connections
33 14 20	Disinfection of Water Distribution Mains
33 31 11	Sanitary Sewer Gravity Mains
03 30 00	Cast In Place Concrete
31 20 00	Earth Moving
32 17 23	Pavement Markings
32 32 23	Segmental Retaining Walls
Cape Fear Public Utility Authority Specification	
Appendix A	Geotechnical Report

Appendix B	Contract Provision Guidelines for Obligate Sponsors and Airport Improvement Projects
Appendix C	Construction Safety and Phase Plan
Appendix D	NCDOT Specification List
Appendix E	Bid Form

Scope of Work Summary/Inclusions:

It is understood and agreed that this **Sitework** package includes all inclusions as described in the following subparagraphs regardless of whether or not they are included in the above specifications or any other specification section or shown on the plans:

Trade Specific Requirements:

1. Includes requirements per specifications listed above as it pertains to the sitework scope of work.
2. Site Contractor shall provide erosion control measures per the approved site plans and maintain erosion control measures while on site in accordance with requirements under the SWPPP. If SWPP issues are not resolved within the time allowed, MCC will perform this work and will be reimbursed by subcontractor via change order.
3. Nighttime and weekend operation will be required to maintain the project schedule. Subcontractor to provide all temporary lighting required to perform scope activities during nighttime operation.
4. Subcontractor has visited the site to observe existing conditions and has accounted for any obvious conditions that differ from the bid documents.
5. It is the Subcontractor’s responsibility to verify the information in all geotechnical reports, as the information contained in the reports cannot be verified for accuracy. Any unsuitable soils discovered, quantities discovered will be determined and agreed upon by this subcontractor, the geo tech, and the CM in the field prior to excavation.
6. Include all surveying, construction engineering, coordination and layout from existing benchmarks and coordinates as required to facilitate the work. Site staking and field engineering is to be included in this scope. Provide surveyor certification for grade and elevation of structure sub grade.
7. Location of existing and new utilities is to be the responsibility of this Subcontractor
8. Prepare, submit, and implement a temporary dewatering program for ground and storm water for the duration of project.
9. Provide and maintain any and all traffic control per NCDOT requirements until final acceptance.

10. It is the responsibility this subcontractor to clean and wash off all equipment and truck tires prior to driving on occupied streets. The CM reserves the right to charge this subcontractor for street cleaning as required.
11. Provide backfill and temporary plates over excavations as required to facilitate vehicle and pedestrian traffic
12. Include necessary mobilizations and material/equipment staging relocations as required to facilitate construction progress and/or as directed by Construction Manager. This Subcontractor understands that the work will be installed in phases / sequences per the project schedule and as required by the CM.
13. Subcontractor is responsible for cleaning of all adjacent work upon completion of the installation. Cleaning shall include the removal of mud, gravel, tire marks, dirt, etc associated with the storage, handling, or installation of the materials provided under this agreement.

SPECIFIC INCLUSIONS:

EARTHWORK, STORM DRAINAGE, & EROSION CONTROL

1. Subcontractor responsible for providing water truck for dust prevention and the cleaning of all streets during the entire project schedule.
2. See structural plans for earthwork notes for any additional requirements as it pertains to the site demo and grading scope of work.
3. If the existing topographic elevations are different from what is shown on the bid documents, all discrepancies must be reported before work starts. Once the Subcontractor starts work, he accepts the existing topographic conditions, and he will not be paid for any discrepancies claimed at a later date.
4. Supply and install all erosion control measures including all inlet protection required and as shown on the Grading, Sedimentation and Erosion Control Plan and the Sedimentation and Erosion Control sheet. Temporary erosion control measures shall be placed as soon as possible. Silt fence and sediment traps shall be installed prior to beginning earth disturbing activities.
5. Reasonable mechanical manipulation and mixing excavated material to obtain proper moisture content or gradation without the use of chemicals is included in the Contract Amount. Mechanical manipulation for aeration drying/mixing will consist of a tractor pulled disk, other similar farm implement or conventional earth moving equipment. Subcontractor shall provide and maintain adequate site drainage for its work during earthwork operations at all times. Disking, plowing, blending and mixing of earth to try and meet geotechnical compaction requirements is included.
6. Include temporary seeding / ground cover. Temporary seeding shall be placed on disturbed areas that are expected to be undisturbed for over 14 days or as directed by the Engineer.
7. Provide and maintain tree protection measures (were applicable), as specified and removal at project completion.

8. Temporary erosion and sediment control measures shall be inspected by the Subcontractor's *personnel* once every seven days and after *each* rain event. Inspections shall be documented, and records shall be maintained by the Subcontractor, to be made available for review upon request. Records shall include, at a minimum, the date, the inspector's name, the maintenance, and corrections needed based on this inspection, and the status of previously identified deficiencies. The temporary protection measures shall be returned to good working conditions within 48 hours after inspection or as directed. Sediment shall be removed as approved and disposed of offsite. *Inspection records shall be kept until the entire contract is complete and has been permanently stabilized.*
9. Create temporary diversion ditches, berms, check dams, stone filters, rock dams, rip rap, etc. to achieve site dewatering as required.
10. Install and maintain all temporary sediment basins per the contract documents. Include excavation, grading, diversion ditches, stone for erosion control, washed stone and synthetic geo filter fabrics.
11. Site demolition as per contract documents including all asphalt, tree and bush, gravel, concrete curb and gutter, sidewalks, and vegetation demolition per the drawings. Existing construction that is not scheduled for demolition shall be protected from construction activities.
12. Site demolition includes demo of the existing foundations for the entrance/exit canopies shown to be removed on the plans. The structural steel will be removed by others. The steel columns will be cut at 1' above finished grade by others and the steel columns below the 1' cut line will be the responsibility of this contractor to remove along with the concrete foundation.
13. Supply and install stone and fabric for required construction entrances at each area of Phase 2
14. Upon completion of planter areas this Subcontractor shall spread topsoil to a minimal depth of 4" in all disturbed areas to receive seeding, sod, or plantings.
15. Backfill of curb / gutter, backfill of asphalt and concrete paving sidewalks and trails, including the backfill of islands, etc.
16. Grading of all paved areas including proof rolls to insure proper compaction. Grading to grades for curb and gutter sub grade including proof roll. Grading tolerances shall be +/-0.10 foot. (Provide surveyor certification)
17. Subcontractors performing excavation and/or digging activities are responsible to contact existing utility locate services prior to excavation start. Subcontractor is responsible for repair of all work to the pre-disturbed condition applicable to the project site, public and private areas that may be impacted by work.
18. Fine grading to grades as indicated and/or as specified within +/- .10' unless noted otherwise.
19. Proper installation & compaction of all sub-base materials in accordance with the specifications.

20. This contractor shall examine sub-grade of areas prior to acceptance for compliance with tolerances. This contractor shall proof roll areas.
21. Restore existing conditions disturbed from this scope of work.
22. Grade all areas to drain. Maintain / slope all grades so that slopes drain to basins.
23. Hauling of excavated material and offsite borrow is the responsibility of this Subcontractor and must be done in accordance with all local / federal laws and regulations.
24. Subcontractor is responsible for maintaining earth spoils area including installation of all erosion control devices and access road as required. See drawing PP-100 for location of surplus area.
25. Perform all traffic control per NCDOT requirements. Including all temporary traffic signage and barricades.
26. Prepare and submit for CM a plan to show entrances and coordination of all traffic, traffic control shall be the responsibility of this subcontractor.
27. Furnish all labor, material, equipment and supervision necessary for a complete installation of storm water system. Installation to be in accordance with the plans and specifications. Including all tie ins to existing storm water system.
28. Subcontractor shall perform all surveying and layout work required for the proper installation of the Storm Water system.
29. Subcontractor is to provide and install all sleeves required for this scope of work.
30. This Subcontractor understands that the work will be installed in phases / sequences per the project schedule and as required by the CM.
31. Provide backfill and temporary plates over excavations as required to facilitate vehicle and pedestrian traffic and to maintain site access
32. Furnish temporary power as required.
33. This subcontract to design and install shoring per location show on drawing PP-101. Upon completion of work remove all shoring. Furnish a sealed engineered shoring scheme as part of submittal documents. Provide guardrails at top of shoring.
34. This subcontractor provides and maintains temporary roads per drawing PP-101.
35. This subcontractor provides access road down for tunnel construction, see drawing PP-101.
36. This subcontractor provides excavation and backfill to tunnel construction. Excavation to tunnel elevation of 83'-5". Include stone, fabric and drainage tile to tunnel.
37. This subcontractor excavates the parking deck grade to elevation 85.17'.
38. This subcontractor includes removal of spoils from auger cast piles and foundations to designated area.

39. This subcontractor to excavate for modular retaining walls. Stockpile material at excavation.
40. Include wooden post and cable fence per detail 3 sheet CP-563.
41. See specifications Volume 3 for special provisions SP-9 for allowance undercut.
42. Provide unit rates per bid form Volume 3 Appendix E with bid.
43. **This subcontractor to include all segmental retaining walls per section 32 32 23. Include concrete cap at top of existing retaining walls per detail 2/S.403. Include all sealants at joints.**
44. **Include metal fence at segmental retaining walls per CS.301, CS.302, and S.403.**

SPECIFIC INCLUSIONS: SITE UTILITIES

1. Furnish all labor, material, equipment and supervision necessary for a complete installation of the Water and Sanitary Sewer in accordance with the Site Water and Sewer plans and specifications.
2. This Subcontractor is to include but is not limited to all on site water line, fire line, sanitary sewer, cleanouts, fire hydrants, tapping sleeves, valves, tracer wire, water meters and vaults, backflow preventers, manholes, PIVs and tamper switches, FDCs, double detector check valves, thrust blocking, etc.
3. Includes the supply and install of all split steel casings per the plans and the CFPUA specifications and details.
4. Include temporary protection of all stub ups, clean outs, boxes, and valves installed within this scope of work
5. Include all concrete finish rings once finish grade has been completed.
6. Heater at double check detector and backflow preventer assemblies (wiring by Electrical Contractor– cord and plug by this package)
7. All final connections to related work in place by this contractor and other trades.
8. Final CFPU engineering Inspection coordination for punch list completion and final coordinated and certified as-builts (locating all improvements) per CFPUA requirements within seven days of completion.
9. Subcontractor is to provide and install all sleeves required for this scope of work.
10. This Subcontractor understands that the work will be installed in phases / sequences per the project schedule and as required by the CM.
11. Subcontractor is responsible for cleaning of all adjacent work upon completion of the installation. Cleaning shall include the removal of mud, gravel, tire marks, dirt, etc associated with the storage, handling, or installation of the materials provided under this agreement.
12. Adjustment of all utilities to finish grades in pavement and graded as required.

13. Include removal and disposal offsite of excess excavated material associated with utility installation as directed by CM. Dispose of spoils offsite at an approved site in accordance with local and state laws and ordinances.
14. Include utility installation, capping and plugging of utilities as required by CFPUA to protect existing services and to install work.
15. Include surface demolition required to install the utility work requirements, paving, trees, etc., and dispose of all such material as required by law.
16. Return backfilled areas to final or excavated grade.
17. Include protection and maintain protection of excavated materials for reuse as backfill. The contractor will be responsible for removing from site and replace backfill material improperly protected. Grade, maintain, and protect all stockpile or spoil storage areas.
18. Subcontractor shall perform all cutting and patching associated with the installation of Work
19. Furnish temporary power as required.
20. Subcontractor shall perform all layout work.
21. Subcontractor shall provide all traffic control as required to install work. Provide closures per encroachments NCDOT/City of Wilmington/New Hanover County requirements.
22. Provide sheeting, shoring, and bracing as required. Furnish a sealed engineered shoring scheme as part of submittal documents for the utility excavation as required
23. Provide backfill and temporary plates over excavations as required to facilitate vehicle and pedestrian traffic and to maintain Site access
24. Prior to starting work locate all underground existing utilities. Conduct preconstruction meeting with utility departments. Coordinate all utility connections to insure no service interruptions.
25. *Subcontractor must always maintain sanitary system. Include for pump around system if required.*
- 26.

SPECIFIC INCLUSIONS:

ASPHALT PAVING, STONE BASE, SIDEWALKS, CURB AND GUTTER

1. Include necessary mobilizations and material/equipment staging relocations as required to facilitate construction progress and/or as directed by Construction Manager.
2. All temporary and permanent asphalt paving including, curb & gutter, concrete islands, concrete paving, exit and entrance plaza concrete paving and islands, sidewalks, raised crosswalks and speed tables, curb ramps, stone base, striping, wheel stops, asphalt trails, etc. including all prep work and stone base, reinforcement under this scope of work as outlined in respectively, for Work in accordance with all Project Documents and all work to

be performed. Stone subbases required for concrete slabs will be the responsibility of the concrete contractor.

3. Includes supply and installation of all pipe bollards and pipe bollard concrete. **Excludes the pipe bollards inside the precast parking deck.**
4. Includes gravel at electrical courtyard.
5. All temporary and permanent striping, directional striping, numbering, etc. included within this scope.
6. No cracked curbs will be accepted. Curb punch list must be completed prior to final lift of pavement being placed.
7. Install all pedestrian sidewalks as indicated in the construction documents.
8. Furnish and install all required ADA, signage, dome mats, and way finding for pedestrian sidewalks, including bumpers and handicapped signage in parking garage.
9. Furnish and install all caulking, sealants, and expansion joint material as specified and required.
10. Verify all final elevations of sewer lids, grates, manholes, inlets, etc. are installed at proper elevations prior to placement of asphalt, concrete paving, pavers, or sidewalks.
11. Implement necessary protective measures to protect completed pavement from unnecessary traffic. Coordinate with Construction Manager.
12. All asphalt paving includes light duty, medium duty, heavy duty, asphalt walkways etc.
13. Contractor will be responsible for all “birdbath” repairs prior to final lift of asphalt being placed. Flood test will be required.
14. Asphalt price fluctuations will not be adjusted, pricing is fixed for this phase.
15. Proper installation & compaction of all subgrade materials in accordance with the specifications & the Owner’s independent testing agency.
16. Stone base & binder shall be placed during the early stages of construction. The final lift of asphalt (to include tack coat), striping, signage, bumpers, etc. shall be installed near the completion of each phase. This Contractor shall include the costs of cleaning the binder to accept the top course at time of installation. Also include cleaning of curb/gutter prior to placement of top course.
17. All pre-cast wheel stops and anchors as indicated in the plans and specifications including parking deck.
18. Provide and install all site, parking and directional signage as indicated on plans including parking and in specifications. Coordinate sign locations with landscape installations prior to installation of such work. See drawings for required new permanent street signage.

19. This Contract includes the examination of the sub-grade of all associated areas included in this scope of work prior to installations in this scope of work for compliance with tolerances, & shall proof roll all sub-grades prior to placement of paving. Installation of pavements confirms acceptance of installed sub-grades by the Paving Subcontractor. Paving Subcontractor shall repair valve boxes, etc. damaged during installation operations.
20. Include all standard provisions in NCDOT Encroachment Agreement.
21. Includes paving and striping for temporary connection roads.
22. Includes temporary curb at temporary curb front, the sidewalk at the temporary open canopy at drop off curb, and the sidewalk at the open canopy at the terminal building.

Schedule Requirements:

TIME IS OF THE ESSENCE

Due to the nature of the project and the extreme cost of delayed delivery of the project, every effort shall be made by the Subcontractor to meet or improve upon the scheduled durations and dates provided below. The subcontractor shall contract with material suppliers, manufacturers, or vendors that have adequate capacity to supply materials or labor as required per schedule. Additionally, the subcontractor has included, in their base bid, sufficient manpower to achieve the below dates and concurrent workflows as required to complete the project on, or ahead of, schedule.

The below schedule requirements are contractually binding for durations of activities indicated. The dates associated with each activity are subject to change based on coordination with other trades, however durations shall remain constant.

1. *Submittals and Shop Drawings:*
 - Shop Drawings: 8 weeks
 - Drawings Approval: 2 week for review

Allowances and Unit Prices:

Lump sum and quantity allowances, when included, are to be utilized only when authorized, in writing, by the Construction Manager. Allowances are in addition to the requirements stated in this bid package or contract documents and are not to be used for costs associated with the required scope of work. All allowances are to be carried in the base bid.

Lump Sum Allowances:

Lump Sum Allowances are those listed herein with fixed dollar amounts and are representative of the direct cost of the work performed. As such, overhead and profit is included in the base contract. In the event that a lump sum allowance is not utilized in full, applicable markups will deducted from the remaining contract amount. Should the fixed dollar amount allowance be exceeded in the execution of the work as directed by Monteith, the subcontract will be increased by the direct cost of work plus overhead and profit as outlined in the General Conditions of the Contract. Utilization of a lump sum allowance is based on established unit rates, or on a time and material basis where Unit Prices are not specified.

Quantity Allowances:

Quantity allowances, when included, are to be carried at the quantity specified and a unit rate provided for each distinct unit requested in addition to the quantities required per contract documents. Reconciliation of quantity allowances will be based on agreed upon unit rates. All unutilized allowances will be deducted from the subcontract amount at the completion of this Scope of Work. The Unit Price may also be used to increase the contract sum as required or authorized by Monteith. Unit prices shall include all costs, benefits, overhead and fees. Total cost of quantity allowances are to be stated on bid forms.

A summary of allowances are as follows:

Lump Sum Allowances:

1. Maintenance of temporary drainage during construction: \$50,000 (used in Phase 2)
2. Existing Utility Conflicts: 60,000 (used in Phase 2)

Quantity Allowances:

1. N/A

Alternates:

Alternates listed in the bid documents shall be carefully reviewed for impacts to the scope of this bid package. Alternate Prices shall include all costs associated with the changes, omissions, additions, or other adjustments to the work of the Bid Package as described in the alternate, or are reasonably inferable there from. Claims for extras resulting from changes caused by the acceptance or rejection of any alternate will not be allowed. Alternate Prices shall also include all cost of overhead, profit, and bond premiums associated with the work of the Alternate whether additive or deductive. The Drawings, Specifications, Project Manual, Addendum(s), and other Contract Documents shall be considered appropriately modified by either the acceptance or rejection of the various Alternatives. The Construction Manager and Owner expressly reserve the right to accept or reject any, or all, Alternate Prices and in any sequence. Acceptance or rejection of any alternate does not relieve the Bidder of timely completion of the Work within the time periods indicated.

Add Alternate No. 1 (Locker Room) – See Drawings Volume 2 Alternate No. 1

All work to rooms 115,116, 117,118

Add Alternate No. 2 (History Corridor)– See Drawings Volume 2 Alternate No. 2

All work to rooms 109, 110,119,120,121,122, Corridor Outside of Locker Rooms

Deduct Alternate No. 3 (Drop Off Canopy Reduction) – See Drawings Volume 2 Alternate No. 3

Revise layout of entry canopy.

Deduct Alternate No. 4 (Delete Tunnel) – See Drawings Volume 2 Alternate No. 4

Delete all work to Connector 112, Atrium 111, Elevator 1 and 2,
Mechanical Room 124, Storage 123

Bid Package – #31B – Cast Auger Piles

Description of Work

In general, this Bid Package is comprehensive to specific CSI Division Work and related Work as referenced, indicated on, or implied by the Project Drawings, Specifications and Project Manual. Subcontractor acknowledges that the following Scope of Work detail is provided as a complementary document and must be used in conjunction with **all** Project Documents. Scope of Work listed is not intended to describe a complete and final work scope. It is provided as a summary overview only.

The scope of the work is identified in the following Specification(s) and further described below:

Specification	Description
Division 00 (All)	Procurement and Contracting Requirements
Division 01 (All)	General Requirements
31 63 16	Auger Cast Piles

Scope of Work Summary/Inclusions:

It is understood and agreed that this **Auger Cast Piles** package includes all inclusions as described in the following subparagraphs regardless of whether or not they are included in the above specifications or any other specification section or shown on the plans:

Trade Specific Requirements:

1. Provide all auger cast pile work including but not limited to drilling, concrete, grout, reinforcing steel, pumps, etc., for a complete installation. The final contract amount will be determined based on the actual liner footage of auger cast pile installed.
2. Reinforcement cages will be furnished with the vertical bars continued in lieu of the dowels and they will be furnished straight (to allow for placement through overburden) for field bending later by others.
3. This subcontractor to provide layout of pile locations and elevations by a licensed surveyor. Provide weekly as-built reports for pile lengths, locations, and elevations. Final surveyed as-builts to be provided upon completion.
4. Subcontractor shall provide OSHA approved rebar caps where reinforcing protrudes rough grade elevation.
5. Temporary power, water, and task lighting will be the responsibility of this subcontractor.
6. All dewatering and pumping needed for this scope to continue operation after a weather event shall be the responsibility of this Subcontractor. All dewatering is to be conducted per the erosion control contract documents.

7. Subcontractor to advise GC of pile lengths exceeding design depth. Final placed lengths to be determined by Owner's 3rd Party testing agency. Final Subcontractor amount to be adjusted based upon as-built quantity and depth of placed piles.
8. This Subcontractor installed pile tops to the elevations indicated on drawings. Piles to be within 12" of design elevation. Mass grading elevation to be established at elevation 85.17 for parking deck and 83.5' for tunnel. Coordinate with mass grading plan, GC, and third party inspections at pile locations where drilling grade exceeds 4'. Provide reinforcing steel with sufficient embedment as indicated in the contract documents.
9. Contractor will furnish Subcontractor with the continuous availability of pile locations ready for Subcontractor's work. Subcontractor includes mobilizing two pile rigs and crews one time to the jobsite and working a minimum 40 hour per week schedule.
10. Subcontractor shall include removal of auger cast pile dirt/spoils from drilling area and shall remove to an on site area designated by the CMAR. Spoil removal from site by grading subcontractor.

Schedule Requirements:

TIME IS OF THE ESSENCE

Due to the nature of the project and the extreme cost of delayed delivery of the project, every effort shall be made by the Subcontractor to meet or improve upon the scheduled durations and dates provided below. The subcontractor shall contract with material suppliers, manufacturers, or vendors that have adequate capacity to supply materials or labor as required per schedule. Additionally, the subcontractor has included, in their base bid, sufficient manpower to achieve the below dates and concurrent workflows as required to complete the project on, or ahead of, schedule.

The below schedule requirements are contractually binding for durations of activities indicated. The dates associated with each activity are subject to change based on coordination with other trades, however durations shall remain constant.

1. *Submittals and Shop Drawings:*
 - Shop Drawings: 6 weeks
 - Drawings Approval: 2 weeks for review

Allowances and Unit Prices:

Lump sum and quantity allowances, when included, are to be utilized only when authorized, in writing, by the Construction Manager. Allowances are in addition to the requirements stated in this bid package or contract documents and are not to be used for costs associated with the required scope of work. All allowances are to be carried in the base bid.

Lump Sum Allowances:

Lump Sum Allowances are those listed herein with fixed dollar amounts and are representative of the direct cost of the work performed. As such, overhead and profit is included in the base contract. In the event that a lump sum allowance is not utilized in full, applicable markups will deducted from the remaining contract amount. Should the fixed dollar amount allowance be exceeded in the execution of the work as directed by Monteith,

the subcontract will be increased by the direct cost of work plus overhead and profit as outlined in the General Conditions of the Contract. Utilization of a lump sum allowance is based on established unit rates, or on a time and material basis where Unit Prices are not specified.

Quantity Allowances:

Quantity allowances, when included, are to be carried at the quantity specified and a unit rate provided for each distinct unit requested in addition to the quantities required per contract documents. Reconciliation of quantity allowances will be based on agreed upon unit rates. All unutilized allowances will be deducted from the subcontract amount at the completion of this Scope of Work. The Unit Price may also be used to increase the contract sum as required or authorized by Monteith. Unit prices shall include all costs, benefits, overhead and fees. Total cost of quantity allowances are to be stated on bid forms.

A summary of allowances are as follows:

Lump Sum Allowances:

1. N/A

Quantity Allowances:

1. N/A

Alternates:

Alternates listed in the bid documents shall be carefully reviewed for impacts to the scope of this bid package. Alternate Prices shall include all costs associated with the changes, omissions, additions, or other adjustments to the work of the Bid Package as described in the alternate, or are reasonably inferable there from. Claims for extras resulting from changes caused by the acceptance or rejection of any alternate will not be allowed. Alternate Prices shall also include all cost of overhead, profit, and bond premiums associated with the work of the Alternate whether additive or deductive. The Drawings, Specifications, Project Manual, Addendum(s), and other Contract Documents shall be considered appropriately modified by either the acceptance or rejection of the various Alternatives. The Construction Manager and Owner expressly reserve the right to accept or reject any, or all, Alternate Prices and in any sequence. Acceptance or rejection of any alternate does not relieve the Bidder of timely completion of the Work within the time periods indicated.

Add Alternate No. 1 (Locker Room) – See Drawings Volume 2 Alternate No. 1

All work to rooms 115,116, 117,118

Add Alternate No. 2 (History Corridor)– See Drawings Volume 2 Alternate No. 2

All work to rooms 109, 110,119,120,121,122, Corridor Outside of Locker Rooms

**Deduct Alternate No. 3 (Drop Off Canopy Reduction) – See Drawings Volume 2
Alternate No. 3**

Revise layout of entry canopy.

Deduct Alternate No. 4 (Delete Tunnel) – See Drawings Volume 2 Alternate No. 4

Delete all work to Connector 112, Atrium 111, Elevator 1 and 2,
Mechanical Room 124, Storage 123

BASE BID – Bid Form

Total length of installed 18”auger cast piles included in base bid.

_____ lft x \$ _____/ft = \$ _____

3 Test piles

_____ lft x \$ _____/ft = \$ _____

3 Load tests

_____ 3 ea. x \$ _____/test = \$ _____

Total Base Bid = \$ _____

END OF BID MANUAL

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SECTION 05 73 13 - GLAZED DECORATIVE METAL RAILINGS

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 post-supported railings with glass-infill panels.
- B. Related Requirements:
 - 1. Section 05 51 13 "Metal Pan Stairs" for steel tube railings associated with metal pan stairs.

1.3 DEFINITIONS

- A. Railings: Guards, handrails, and similar devices used for protection of occupants at open-sided floor and exterior deck areas and for pedestrian guidance and support, visual separation, or wall protection.

1.4 COORDINATION AND SCHEDULING

- A. Coordinate installation of anchorages for railings. 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 items to Project site in time for installation.

1.5 PREINSTALLATION MEETINGS

- A. Preinstallation Conference: Conduct conference at Project site.

1.6 ACTION SUBMITTALS

- A. Product Data:

1. Metal railings assembled from standard components.
 2. Glass products.
 3. Anchoring cement.
- B. Shop Drawings: Include plans, elevations, sections, and attachment details.
- C. Samples for Initial Selection: For products involving selection of color, texture, or design.
- D. Samples for Verification: For each type of exposed finish required.
1. Sections of each distinctly different linear railing member, including handrails, top rails, posts, and balusters.
 2. Base channel.
 3. Each type of glass and glass edge required.
 4. Fittings and brackets.
 5. Assembled Samples of railing systems, made from full-size components, including top rail, post, handrail, glass-infill panels. Show method of finishing members at intersections. Samples need not be full height.
- E. Delegated-Design Submittal: For installed products indicated to comply with performance requirements and design criteria, including analysis data signed and sealed by the qualified professional engineer responsible for their preparation.

1.7 INFORMATIONAL SUBMITTALS

- A. Qualification Data: For professional engineer or testing agency.
- B. Product Test Reports: For tests performed by a qualified testing agency, in accordance with ASTM E894, ASTM E935, ASTM E2353, and ASTM E2358.
- C. Evaluation Reports: From ICC-ES or other qualified testing agency acceptable to authorities having jurisdiction.
1. For glazed decorative metal railings.
 2. For post-installed anchors.
- D. Preconstruction test reports.

1.8 QUALITY ASSURANCE

- A. 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 for each form and finish of glass-infill panel railing consisting of two posts, top rail, handrail, glass-infill panel, and anchorage system components that are full height and are not less than 24 inches in length.
2. Subject to compliance with requirements, approved mockups may become part of the completed Work if undisturbed at time of Substantial Completion.

1.9 FIELD CONDITIONS

- A. Field Measurements: Verify actual locations of walls and other construction contiguous with railings by field measurements before fabrication and indicate measurements on Shop Drawings.

1.10 WARRANTY

- A. Manufacturer's Special Warranty for Laminated Glass: Glazed decorative metal railing manufacturer agrees to replace laminated-glass units that deteriorate within specified warranty period. Deterioration of laminated glass is defined as defects developed from normal use that are not attributed to glass breakage or to maintaining and cleaning laminated glass contrary to manufacturer's written instructions. Defects include edge separation, delamination materially obstructing vision through glass, and blemishes exceeding those allowed by referenced laminated-glass standard.
 1. Warranty Period: 10 years from date of Substantial Completion.

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. C.R. Laurence Co., Inc.; CRH Americas, Inc.
 2. Greco; CSW Industrials Inc.
 3. Julius Blum & Co., Inc.
 4. Livers Bronze Co. (**Basis of Design**)
 5. Morse Industries.
 6. TACO Metals Inc.
 7. Tuttle, a Dant Clayton Division.
 8. Wagner Companies (The); R&B Wagner, Inc.

- B. Source Limitations for Laminated Glass: Obtain from single source from single manufacturer.
- C. Source Limitations for Decorative Metal Railing Components: Obtain from single source from single manufacturer for each component and installation method.
- D. Product Options: Information on Drawings and in the Specifications establishes requirements for railing system's aesthetic effects and performance characteristics. Aesthetic effects are indicated by dimensions, arrangements, alignment, and profiles of components and assemblies as they relate to sightlines, to one another, and to adjoining construction.
 - 1. Do not change intended aesthetic effects, as judged solely by Architect, except with Architect's approval. If changes are proposed, submit comprehensive explanatory data to Architect for review.

2.2 PERFORMANCE REQUIREMENTS

- A. Delegated Design: Engage a qualified professional engineer, as defined in Section 01 40 00 "Quality Requirements," to design glazed decorative metal railings, including attachment to building construction.
- B. General: In engineering railings to withstand structural loads indicated, determine allowable design working stresses of railing materials based on the following:
 - 1. Stainless Steel: 60 percent of minimum yield strength.
 - 2. Steel: 72 percent of minimum yield strength.
 - 3. Glass: 25 percent of mean modulus of rupture (50 percent probability of breakage), as listed in "Mechanical Properties" in AAMA CW-12, "Structural Properties of Glass."
- C. Structural Performance: Railings, including attachment to building construction, shall withstand the effects of gravity loads and the following loads and stresses within limits and under conditions indicated:
 - 1. Handrails and Top Rails of Guards:
 - a. Uniform load of 50 lbf/ft. applied in any direction.
 - b. Concentrated load of 200 lbf applied in any direction.
 - c. Uniform and concentrated loads need not be assumed to act concurrently.
 - 2. Glass-Infill Panels:
 - a. Concentrated load of 50 lbf applied horizontally on an area of 1 sq. ft..
 - b. Infill load and other loads need not be assumed to act concurrently.

D. Thermal Movements: Allow for thermal movements from ambient and surface temperature changes.

1. Temperature Change: 120 deg F, ambient; 180 deg F, material surfaces.

2.3 METALS, GENERAL

A. Metal Surfaces, General: Provide materials with smooth surfaces, without seam marks, roller marks, rolled trade names, stains, discolorations, or blemishes.

B. Brackets, Flanges, and Anchors: Same metal and finish as supported rails unless otherwise indicated.

2.4 STAINLESS STEEL

A. Tubing: ASTM A554, Grade MT 304.

B. Pipe: ASTM A312/A312M, Grade TP 304.

C. Castings: ASTM A743/A743M, Grade CF 8 or Grade CF 20.

D. Sheet, Strip, Plate, and Flat Bar: ASTM A666 or ASTM A240/A240M, Type 304.

E. Bars and Shapes: ASTM A276, Type 304.

2.5 GLASS AND GLAZING PRODUCTS, GENERAL

A. Glazing Publications: Comply with written instructions 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.

B. Safety Glazing: Glazing shall comply with 16 CFR 1201, Category II.

C. Safety Glazing Labeling: Permanently mark glass 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.

D. Fully Tempered Float Glass: ASTM C1048, Kind FT (fully tempered), Condition A (uncoated) unless otherwise indicated, Type I, Class 1 (clear), Class 1 and low-iron clear, or Class 2 (tinted) as indicated, Quality-Q3.

- E. Glazing Gaskets for Glass-Infill Panels: Glazing gaskets and related accessories as recommended or supplied by railing manufacturer for installing glass-infill panels in post-supported railings.

2.6 GLASS HANDRAILS AND GUARDS

- A. Tempered Glass Handrails and Guards: Provide products that have been tested for surface and edge compression in accordance with ASTM C1048 and for impact strength in accordance with 16 CFR 1201 for Category II materials.
 - 1. Glass Color: **See Finish Legend.**
 - 2. Thickness for Glass-Infill Panels: As required by structural loads, but not less than 6.0 mm.
- B. Laminated Glass Handrails and Guards: ASTM C1172, Type II with two plies of glass bonded together by an interlayer.
 - 1. Construction: Laminate glass with polyvinyl butyral interlayer or ionoplast polymer interlayer to comply with interlayer manufacturer's written instructions.
 - 2. Interlayer Thickness: 0.030 inch.
 - 3. Kind: LT (laminated tempered).
 - 4. Glass Color: To match Tempered Glass.

2.7 FASTENERS

- A. Fastener Materials: Unless otherwise indicated, provide the following:
 - 1. Stainless Steel Components: Type 304 stainless steel fasteners.
 - 2. Dissimilar Metals: Type 304 stainless steel fasteners.
- B. Fasteners for Anchoring to Other Construction: Select fasteners of type, grade, and class required to produce connections suitable for anchoring railings to other types of construction indicated and capable of withstanding design loads.
- C. Provide concealed fasteners for interconnecting railing components and for attaching railings to other work unless exposed fasteners are unavoidable or exposed fasteners are the standard fastening method for railings indicated.
 - 1. Provide tamper-resistant flat-head machine screws for exposed fasteners unless otherwise indicated.
- D. Post-Installed Anchors: Fastener systems with working capacity greater than or equal to design load, in accordance with an evaluation report acceptable to authorities having jurisdiction, based on ICC-ES AC193 or ICC-ES AC308.

1. Material for Interior Locations: Carbon-steel components zinc plated to comply with ASTM B633 or ASTM F1941/ASTM F1941M, Class Fe/Zn 5, unless otherwise indicated.
2. Material for Exterior Locations and Where Stainless Steel Is Indicated: Alloy Group 1 stainless steel bolts, ASTM F593, and nuts; ASTM F594.

2.8 MISCELLANEOUS MATERIALS

- A. Handrail Brackets: Cast stainless steel, center of rail from face of structural glass balusters.
- B. Nonshrink, Nonmetallic Grout: Factory-packaged, nonstaining, noncorrosive, nongaseous grout complying with ASTM C1107/C1107M. Provide grout specifically recommended by manufacturer for interior and exterior applications.
- C. Anchoring Cement: Factory-packaged, nonshrink, nonstaining, hydraulic-controlled expansion cement formulation for mixing with water at Project site to create pourable anchoring, patching, and grouting compound.

2.9 FABRICATION OF METAL RAILINGS

- A. Fabricate railings to comply with requirements indicated for design, dimensions, member sizes and spacing, details, finish, and anchorage, but not less than that required to support structural loads.
- B. Assemble railings in the shop to greatest extent possible to minimize field splicing and assembly. Disassemble units only as necessary for shipping and handling limitations. Clearly mark units for reassembly and coordinated installation. Use connections that maintain structural value of joined pieces.
- C. Cut, drill, and punch metals cleanly and accurately. Remove burrs and ease edges to a radius of approximately 1/32 inch unless otherwise indicated. Remove sharp or rough areas on exposed surfaces.
- D. Form work true to line and level with accurate angles and surfaces.
- E. Fabricate connections that will be exposed to weather in a manner to exclude water. Provide weep holes where water may accumulate. Locate weep holes in inconspicuous locations.
- F. Cut, reinforce, drill, and tap as indicated to receive finish hardware, screws, and similar items.
- G. Mechanical Connections: Connect members with concealed mechanical fasteners and fittings. Fabricate members and fittings to produce flush, smooth, rigid, hairline joints.

1. Fabricate splice joints for field connection using an epoxy structural adhesive if this is manufacturer's standard splicing method.
 - H. Form changes in direction as follows:
 1. By flush bends or by inserting prefabricated flush-elbow fittings.
 2. By bending to smallest radius that will not result in distortion of railing member.
 - I. Bend members in jigs to produce uniform curvature for each configuration required; maintain cross section of member throughout entire bend without buckling, twisting, cracking, or otherwise deforming exposed surfaces of components.
 - J. Close exposed ends of hollow railing members with prefabricated end fittings.
 - K. Brackets, Flanges, Fittings, and Anchors: Provide wall brackets, flanges, handrail brackets, miscellaneous fittings, and anchors to interconnect railing members to other work where indicated.
 1. At brackets and fittings fastened to plaster or gypsum board partitions, provide crush-resistant fillers, or other means to transfer loads through wall finishes to structural supports and to prevent bracket or fitting rotation and crushing of substrate.
 - L. Provide inserts and other anchorage devices for connecting railings to concrete or masonry work. Fabricate anchorage devices capable of withstanding loads imposed by railings. Coordinate anchorage devices with supporting structure.
 - M. For railing posts set in concrete, provide stainless steel sleeves not less than 6 inches long with inside dimensions not less than 1/2 inch greater than outside dimensions of post, with metal plate forming bottom closure.
- 2.10 FABRICATION OF GLASS PANELS AND BALUSTERS
- A. Fabricate glass to sizes and shapes required; provide for proper edge clearance and bite on glazing panels.
 - B. Glass-Infill Panels: Provide tempered or laminated, tempered glass-infill panels.
 1. Edge Finish: Clean-cut or flat-grind edges to produce smooth, square edges with slight chamfers at junctions of edges and faces.
- 2.11 METAL FINISH REQUIREMENTS, GENERAL
- A. Protect mechanical finishes on exposed surfaces from damage by applying a strippable, temporary protective covering before shipment.

- B. Appearance of Finished Work: Noticeable variations in same piece are not acceptable. Variations in appearance of abutting or adjacent pieces are acceptable if they are within one-half of the range of approved Samples. 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.

2.12 STAINLESS STEEL FINISHES

- A. Surface Preparation: Remove tool and die marks and stretch lines, or blend into finish.
- B. Polished Finishes: Grind and polish surfaces to produce uniform finish, free of cross scratches.
 - 1. Run grain of directional finishes with long dimension of each piece.
 - 2. When polishing is completed, passivate and rinse surfaces. Remove embedded foreign matter and leave surfaces chemically clean.
- C. Stainless Steel Tubing Finishes:
 - 1. 180-Grit Polished Finish: Uniform, directionally textured finish.
- D. Stainless Steel Sheet, Strip, Plate, and Bar Finishes:
 - 1. Directional Satin Finish: ASTM A480/A480M, No. 4.

PART 3 - EXECUTION

3.1 INSTALLATION, GENERAL

- A. Comply with Drawings and manufacturer's written instructions for installing glazed decorative metal railings, accessories, and other components.
- B. Perform cutting, drilling, and fitting required for installing metal railings.
 - 1. Fit exposed connections together to form tight, hairline joints.
 - 2. Install railings level, plumb, square, true to line; without distortion, warp, or rack.
 - 3. Set railings accurately in location, alignment, and elevation; measured from established lines and levels.
 - 4. Do not weld, cut, or abrade surfaces of metal railing components that have been coated or finished after fabrication and that are intended for field connection by mechanical or other means without further cutting or fitting.
 - 5. Set posts plumb within a tolerance of 1/16 inch in 3 feet.

6. Align rails so variations from level for horizontal members and variations from parallel with rake of steps and ramps for sloping members do not exceed 1/4 inch in 12 feet.
- C. Control of Corrosion: Prevent galvanic action and other forms of corrosion by insulating metals and other materials from direct contact with incompatible materials.
- D. Adjust railings before anchoring to ensure matching alignment at abutting joints.
- E. Fastening to In-Place Construction: Use anchorage devices and fasteners where necessary for securing railings and for properly transferring loads to in-place construction.

3.2 METAL RAILING CONNECTIONS

- A. Nonwelded Connections:
 1. Use mechanical or adhesive joints for permanently connecting railing components.
 2. Use wood blocks and padding to prevent damage to railing members and fittings.
 3. Seal recessed holes of exposed locking screws using plastic cement filler colored to match finish of railings.

3.3 METAL ANCHORING POSTS

- A. Use steel pipe sleeves preset and anchored into concrete for installing posts. After posts have been inserted in sleeves, fill annular space between post and sleeve with nonshrink, nonmetallic grout or anchoring cement, mixed and placed to comply with anchoring material manufacturer's written instructions.
- B. Cover anchorage joint with flange of same metal as post, attached to post with setscrews.
- C. Anchor posts to metal surfaces with flanges, angle type, or floor type as required by conditions, connected to posts and to metal supporting members as follows:
 1. For stainless steel railings, weld flanges to posts and bolt to metal-supporting surfaces.

3.4 CLEANING

- A. Clean aluminum and stainless steel by washing thoroughly with water and soap, rinsing with clean water, and wiping dry.
- B. Clean and polish glass as recommended in writing by manufacturer. Wash both exposed surfaces in each area of Project not more than four days before date scheduled for inspections that establish date of Substantial Completion.

3.5 PROTECTION

- A. Protect finishes of railings from damage during construction period with temporary protective coverings approved by railing manufacturer. Remove protective coverings at time of Substantial Completion.
- B. Restore finishes damaged during installation and construction period so no evidence remains of correction work. Return items that cannot be refinished in the field to the shop; make required alterations and refinish entire unit, or provide new units.

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SECTION 07 42 13.23 - METAL COMPOSITE MATERIAL WALL PANELS

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Metal composite material (MCM) panels (referred to as ACM (Aluminum Composite Material) on Drawings)

1.2 DEFINITIONS

- A. DBVC: Drained and back-ventilated cavity rainscreen system designed to drain and dry water entering cavity through drainage channels, weeps, and air ventilation.
- B. MCM/: Metal composite material; cladding material formed by joining two thin metal skins to polyethylene or fire-retardant core and bonded under precise temperature, pressure, and tension.
- C. PER: Pressure-equalized rainscreen system designed for no water intrusion, with equal pressure within air cavity and outside cladding barrier.

1.3 PREINSTALLATION MEETINGS

- A. Preinstallation Conference: Conduct conference at Project site.
 - 1. Meet with Owner, Architect, Owner's insurer if applicable, MCM system Installer, MCM system manufacturer's representative, and installers whose work interfaces with or affects MCM panels, including installers of doors, windows, and louvers.
 - 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 MCM system 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 siding details, wall penetrations, openings, and condition of other construction that affect MCM system.
 - 6. Review governing regulations and requirements for insurance, certificates, and tests and inspections if applicable.

7. Review temporary protection requirements for system assembly during and after installation.
8. Review procedures for repair of 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: Include construction details, material descriptions, dimensions of individual components and profiles, and finishes for each type of panel, system, and accessory.
 1. Metal composite material (MCM) panels.
- B. Shop Drawings:
 1. Include fabrication and installation layouts of MCM system; details of edge conditions, joints, panel profiles, corners, anchorages, attachment assembly, trim, flashings, closures, accessories, and special details.
 2. Accessories: Include details of flashing, trim, and anchorage, at a scale of not less than **1-1/2 inches per 12 inches**.
 3. Provide signed and sealed drawings, by a qualified design professional in Project jurisdiction, of MCM system showing compliance with performance requirements and design criteria identified for this Project.
- C. Samples for Initial Selection: For each type of MCM panel indicated, with factory-applied color finishes.
 1. Size: Manufacturers' standard size.
 2. Include Samples of trim and accessories involving color selection.
- D. Samples for Verification: For each type of MCM panel and MCM system required, with factory-applied color finishes.
 1. MCM Panel: Two samples, Manufacturers' standard size.
- E. Delegated Design Submittals: For MCM system, including analysis data signed and sealed by the qualified professional engineer responsible for their preparation.

1.5 INFORMATIONAL SUBMITTALS

- A. Test and Evaluation Reports:

1. Product Test Reports: For each MCM system, for tests performed by qualified testing agency.
 - a. MCM Panel Manufacturer's Material Test Reports: Certified test reports showing compliance with specific performance or third-party listing documenting compliance in accordance with the IBC.
 - b. Fabricator's MCM System Test Reports: Certified test reports showing system compliance with specific performance or third-party listing documenting compliance in accordance with the IBC.
 - 1) Dry or Wet Seal System: Tested to AAMA 501.1.
 2. Preconstruction Test Reports: For MCM system.
- B. Field Quality-Control Submittals:
1. Field quality-control reports.
- C. Qualification Statements: For manufacturer, fabricator and Installer.
- D. Delegated design engineer qualifications.
- E. Sample warranties.
- 1.6 CLOSEOUT SUBMITTALS
- A. Maintenance Data: For MCM panels.
- B. Warranty Documentation:
1. Manufacturers' special warranties.
 2. Installer's special warranties.
- 1.7 QUALITY ASSURANCE
- A. Manufacturer Qualifications: Minimum 5 years' experience.
- B. Fabricator Qualifications: Approved by MCM panel manufacturer.
- C. Installer Qualifications: Fabricator of MCM system or Entity that employs installers and supervisors who are trained and approved by MCM system manufacturer.
- D. Delegated Design Engineer Qualifications: A professional engineer who is legally qualified to practice in state where Project is located and who is experienced in providing engineering services of the type indicated.
- E. Testing Agency Qualifications: An agency acceptable to authorities having jurisdiction.

1.8 MOCKUPS

- A. Build mockups to set quality standards for fabrication and installation and for preconstruction testing.
 - 1. Build mockup(approximately 900 sq. ft.- location to be determined), including corner, soffits, coping, supports, attachments, and accessories.
 - 2. Approval of mockups does not constitute approval of deviations from the Contract Documents contained in mockups unless Owner specifically approves such deviations by Change Order.
 - 3. Subject to compliance with requirements, approved mockups may become part of the completed Work if undisturbed at time of Substantial Completion.

1.9 PRECONSTRUCTION TESTING

- A. Preconstruction Testing Service: Engage a qualified testing agency to perform preconstruction testing on field mockups.
 - 1. Area and location TBD.
 - 2. Provide test specimens and assemblies representative of proposed materials and construction.
 - 3. Build laboratory mockups at testing agency facility; use personnel, materials, and methods of construction that will be used at Project site.
 - 4. Notify Architect seven days in advance of dates and times when laboratory mockups will be tested.
- B. Preconstruction Testing: Performed by a qualified testing agency on manufacturer's standard assemblies.
 - 1. Water-Spray Test: Conduct water-spray test of mockup of MCM system, testing for water penetration in accordance with AAMA 501.2.

1.10 DELIVERY, STORAGE, AND HANDLING

- A. Deliver components, MCM panels, and other manufactured items so as not to be damaged or deformed. Package MCM panels for protection during transportation and handling.
- B. Unload, store, and erect MCM panels in a manner to prevent bending, warping, twisting, and surface damage.
- C. Stack MCM panels horizontally on platforms or pallets, covered with suitable weathertight and ventilated covering. Store MCM panels to ensure dryness, with

positive slope for drainage of water. Do not store MCM panels in contact with other materials that might cause staining, denting, or other surface damage.

- D. Retain strippable protective covering on MCM panels during installation.
- E. Copper Panels: Wear gloves when handling to prevent fingerprints and soiling of surface.

1.11 FIELD CONDITIONS

- A. Weather Limitations: Proceed with installation only when existing and forecasted weather conditions permit assembly of MCM panels to be performed in accordance with manufacturers' written instructions and warranty requirements.

1.12 COORDINATION

- A. Coordinate MCM panel installation with rain drainage work, flashing, trim, construction of soffits, and other adjoining work to provide a leakproof, secure, and noncorrosive installation.

1.13 WARRANTY

- A. Panel Integrity Warranty: Manufacturer agrees to repair or replace components of MCM panels 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: Five years from date of Substantial Completion.
- B. Panel Finish Warranty: Manufacturer agrees to repair finish or replace MCM 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 in accordance with ASTM D2244.
 - b. Chalking in excess of a No. 8 rating when tested in accordance with 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.

- C. MCM System Warranty: System manufacturer's standard form in which manufacturer agrees to repair or replace components of MCM systems that fail in materials or workmanship within specified warranty period.
 - 1. Warranty Period: Five years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

- A. Delegated Design: Engage a qualified professional engineer, as defined in Section 014000 "Quality Requirements," to design MCM system.
- B. Structural Performance: MCM systems to withstand the effects of the following loads, based on testing in accordance with ASTM E330/E330M:
 - 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.
- C. Air Infiltration: Air leakage of not more than 0.06 cfm/sq. ft. when tested in accordance with ASTM E283/E283M at the following test-pressure difference:
 - 1. Test-Pressure Difference: 1.57 lbf/sq. ft..
- D. Water Penetration under Static Pressure: No water penetration when tested in accordance with ASTM E331 at the following test-pressure difference:
 - 1. Test-Pressure Difference: 2.86 lbf/sq. ft..
- E. Water Penetration under Dynamic Pressure: No water penetration when tested in accordance with AAMA 501.1 at the following test pressure:
 - 1. Test Pressure: 6.24 psf.
- F. Pressure Cycling: Provide PER system with a pass rating in accordance with AAMA 508.
 - 1. Lag between the cavity and the cyclic wind pressure to not exceed 0.08 seconds.
 - 2. Maximum differential between the cavity and the cyclic wind pressure to not exceed 50 percent of the maximum test pressure.
- G. Thermal Movements: Allow for thermal movements from ambient and surface temperature changes.

1. Temperature Change: 120 deg F, ambient; 180 deg F (100 deg C), material surfaces.
- H. Fire-Resistance Ratings: Comply with ASTM E119 or UL 263; testing by a qualified testing agency. Identify products with appropriate markings of applicable testing agency.
1. Indicate design designations from UL's "Fire Resistance Directory" or from listings of another qualified testing agency.
- I. Fire Propagation Characteristics: MCM system passes NFPA 285 testing.
- 2.2 METAL COMPOSITE MATERIAL (MCM) WALL PANELS
- A. Metal Composite Material (MCM) Wall Panels: Provide MCM panels fabricated from two metal facings bonded to a solid, extruded thermoplastic core.
1. **Manufacturers:** Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to the following:
 - a. ARCONIC ARCHITECTURAL PRODUCTS, LLC (Reynobond-Basis of Design)
 - b. ALPOLIC Materials; Mitsubishi Chemical Composites.
 - c. ALUCOBOND; 3A Composites USA, Inc.
 - d. Alcotex Inc.
 - e. Alucoil North America.
 2. Core: FR.
 3. Panel Thickness: 0.157 inch.
 4. Bond Strength: 22.5 in-lb/in. when tested for bond integrity in accordance with ASTM D1781.
 5. Fire Performance: Flame-spread index less than 25 and smoke-developed index less than 450, in accordance with ASTM E84 or UL 723.
- B. MCM Panel Materials:
1. Aluminum-Faced Panels: ASTM B209/B209M alloy as standard with manufacturer, temper as required to suit finish and forming operations 3003, H14 with 0.032-inch-thick, aluminum sheet facings.
 - a. Exterior Finish: Two-coat fluoropolymer.
 - 1) Color: See Drawing sheet for colors selection.

2.3 METAL COMPOSITE MATERIAL (MCM) SYSTEM

- A. Dry-Seal Barrier MCM System: Provide factory-formed and -assembled, MCM panels formed into profile for dry-seal barrier system installation. Include attachment assembly components, **panel stiffeners**, and accessories required for weathertight system.
 - 1. **Manufacturers:** Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to the following:
 - a. ARCONIC ARCHITECTURAL PRODUCTS, LLC (Reynobond-Basis of Design)
 - b. ALPOLIC Materials; Mitsubishi Chemical Composites.
 - c. ALUCOBOND; 3A Composites USA, Inc.
 - d. Alcotex Inc.
 - e. Alucoil North America.
 - f. Guernsey Architectural Solutions, Inc.
- B. System Panel Depth: **2-1/4 inches (57 mm)** or as indicated on drawings.
- C. Attachment Assembly Components: Manufacturer's standard formed from extruded aluminum.
- D. Labeling: Comply with labeling requirement of applicable building code.

2.4 ACCESSORIES

- A. Metal Subframing and Furring: ASTM C955 cold-formed, metallic-coated steel sheet ASTM A653/A653M, **G90 (Z275)** hot-dip galvanized coating designation or ASTM A792/A792M, **Class AZ50 (Class AZM150)** aluminum-zinc-alloy coating designation unless otherwise indicated. Provide manufacturer's standard sections as required for support and alignment of MCM system.
- B. System Accessories: Provide components required for a complete, weathertight wall system including trim, copings, fasciae, mullions, sills, corner units, clips, flashings, sealants, gaskets, fillers, closure strips, and similar items. Match material and finish of MCM panels unless otherwise indicated.
- C. Flashing and Trim: Provide flashing and trim formed from same material as MCM 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 MCM panels.
- D. Panel Fasteners: Self-tapping screws designed to withstand design loads. Use gasketed or approved coated fasteners between dissimilar metals.

1. Aluminum Panels: Use aluminum or stainless steel fasteners for surfaces exposed to the exterior; use aluminum or galvanized-steel fasteners for surfaces exposed to the interior.
 2. Copper Panels: Use copper, stainless steel, or hardware-bronze fasteners.
 3. Steel, Titanium, or Zinc Panels: Use stainless steel fasteners.
 4. Provide exposed fasteners with heads matching color of MCM panels by means of plastic caps or factory-applied coating. Provide EPDM or PVC sealing washers for exposed fasteners.
- E. Panel Sealants: ASTM C920; elastomeric polyurethane or silicone sealant; of type, grade, class, and use classifications required to seal joints in MCM panels and remain weathertight; and as recommended in writing by MCM system manufacturer.

2.5 FABRICATION

- A. Fabricate and finish MCM panels at the factory, by panel manufacturer's standard procedures and processes, as necessary to fulfill indicated panel performance requirements demonstrated by laboratory testing.
- B. Shop-fabricate MCM systems and accessories by fabricator's standard procedures and processes, as necessary to fulfill indicated performance requirements demonstrated by laboratory testing. Comply with requirements of MCM panel manufacturer, of indicated system profiles, and with dimensional and structural requirements.
1. Fabricate panels to dimensions indicated on Drawings based on an assumed design temperature of 70 deg F. Allow for ambient temperature range at time of fabrication.
 2. Formed MCM panel lines, breaks, and angles to be sharp and straight, with surfaces free from warp or buckle.
 3. Fabricate panels with sharply cut edges and no displacement of face sheet or protrusion of core.
 4. Fabricated Panel Tolerances: Shop-fabricate panels to sizes and joint configurations indicated on Drawings.
 - a. Width: Plus or minus 0.079 inch at 70 deg F.
 - b. Length: Plus or minus 0.079 inch at 70 deg F.
 - c. Squareness: Plus or minus 0.079 inch at 70 deg F.
 5. Attach routed-and-returned panel flanges to perimeter extrusions or panel clips with manufacturer's standard fasteners or structural silicone adhesive.
- C. Sheet Metal Flashing and Trim: Fabricate flashing and trim to comply with manufacturer's written instructions 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.
4. Sealed Joints: Form non-expansion, 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 manufacturer.
 - a. Size: As recommended by SMACNA's "Architectural Sheet Metal Manual" or metal 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: Noticeable variations in same piece are unacceptable. 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.
- C. Coil-Coated Metal Finish:
 1. PVDF Fluoropolymer: AAMA 2605, two-coat 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.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine substrates, areas, and conditions, with Installer present, for compliance with requirements for installation tolerances, MCM system 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 MCM system 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 MCM system 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 assemblies penetrating MCM system to verify actual locations of penetrations relative to seam locations of MCM panels before installation.
- C. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION OF MCM SYSTEM

- A. General: Install MCM system in accordance with system manufacturer's written instructions in orientation, sizes, and locations indicated on Drawings. Install panels perpendicular to supports unless otherwise indicated. Anchor MCM system securely in place, with provisions for thermal and structural movement.
 1. Shim or otherwise plumb substrates receiving MCM system.
 2. Flash and seal MCM system at perimeter of all openings. Fasten with self-tapping screws.
 3. Install screw fasteners in predrilled holes.
 4. Locate and space fastenings in uniform vertical and horizontal alignment.
 5. Install flashing and trim as MCM system work proceeds.
 6. Align bottoms of MCM panels and fasten with blind rivets, bolts, or self-tapping screws. Fasten flashings and trim around openings and similar elements with self-tapping screws.
 7. Provide weathertight escutcheons for all items penetrating system.
 8. Where dissimilar metals contact each other or corrosive substrates, protect against galvanic action as recommended in writing by MCM system manufacturer.
 9. Attach MCM panels to supports at locations, spacings, and with fasteners recommended by manufacturer to meet listed performance requirements.
- B. Attachment Assembly, General: Install attachment assembly required to support MCM panels and to provide a complete weathertight wall system, including tracks, drainage channels, anchor channels, perimeter extrusions, and panel clips.
 1. Install subframing, furring, and other panel support members and anchorages in accordance with ASTM C955.

2. Install support system at locations, at spacings, and with fasteners recommended by MCM system manufacturer to meet listed performance requirements.
- C. Dry-Seal MCM System: Attach MCM panels by interlocking panel **clips** into **tracks, channels, in a sequential series**.
1. Seal horizontal and vertical joints between adjacent MCM panels with manufacturer's standard gaskets.
- D. Install panels to allow individual panels to "free float" and be installed and removed without disturbing adjacent panels.
- E. Install accessories with positive anchorage to building and weathertight mounting, and provide for thermal expansion. Coordinate installation with flashings and other components.
1. Install accessory components required for a complete MCM system assembly including trim, copings, corners, seam covers, flashings, fillers, closure strips, and similar items. Provide types indicated by MCM system manufacturer.
- F. 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 trim to fit substrates and to result in waterproof performance.
 2. Expansion Provisions: Provide for thermal expansion of exposed flashing and trim. Space movement joints at a maximum of **10 ft.** with no joints allowed within **24 inches** 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** deep, filled with mastic sealant (concealed within joints).
- 3.3 INSTALLATION TOLERANCES
- A. Shim and align MCM panels within installed tolerance of **1/4 inch in 20 ft.**, non-accumulative, on level, plumb, and location lines as indicated, and within **1/8-inch** offset of adjoining faces and of alignment of matching profiles.

3.4 FIELD QUALITY CONTROL

- A. Water-Spray Test: After installation, test area of assembly as directed by Architect for water penetration in accordance with AAMA 501.2.
- B. Manufacturer's Field Service: Engage a factory-authorized service representative to test and inspect completed MCM system installation, including accessories.
- C. MCM system will be considered defective if it does not pass test and inspections.
- D. Additional tests and inspections, at Contractor's expense, are performed to determine compliance of replaced or additional work with specified requirements.
- E. Prepare test and inspection reports.

3.5 CLEANING

- A. Remove temporary protective coverings and strippable films as MCM panels are installed unless otherwise indicated in manufacturer's written installation instructions. On completion of installation, clean finished surfaces as recommended by MCM panel manufacturer. Maintain in a clean condition during construction.
- B. After installation, clear weep holes and drainage channels of obstructions, dirt, and sealant.

3.6 PROTECTION

- A. Replace MCM panels that have been damaged or have deteriorated beyond successful repair by finish touchup or similar minor repair procedures.

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SECTION 21 10 00 - SPRINKLER AND STANDPIPE SYSTEMS

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. Pipes, fittings, and specialties.
 - 2. Specialty valves.
 - 3. Pressure gages.
 - 4. Fire Department Connections.
 - 5. Hose Connections
 - 6. Seismic Restraints.
 - 7. General Duty Valves.
 - 8. Escutcheons.
 - 9. Sleeves.

1.3 DEFINITIONS

- A. Standard-Pressure Piping: system piping designed to operate at working pressure of 175-psig maximum.

1.4 ACTION SUBMITTALS

- A. Product Data: For each type of product.
 - 1. Include rated capacities, operating characteristics, and furnished specialties and accessories.
- B. Shop Drawings: For standpipe systems.
 - 1. Include plans, elevations, sections, and attachment details.
- C. Delegated-Design Submittal: For standpipe systems indicated to comply with requirements and design criteria.

1.5 INFORMATIONAL SUBMITTALS

- A. Coordination Drawings: Provide combined coordination drawings using input from installers of the other building services in accordance with the Division 23 requirements.
- B. Qualification Data: For qualified Installer and Designer.
- C. Approved Standpipe Drawings: Working plans, prepared according to NFPA 13 and NFPA 14, that have been approved by authorities having jurisdiction, including hydraulic calculations if applicable.
- D. Welding certificates.
- E. Seismic Restraint Calculations
- F. Field Test Reports and Certificates: Indicate and interpret test results for compliance with performance requirements and as described in NFPA 13 and NFPA 14. Include "Contractor's Material and Test Certificate for Aboveground Piping."
- G. Field quality-control reports.

1.6 CLOSEOUT SUBMITTALS

- A. Operation and Maintenance Data: For standpipe systems and specialties to include in emergency, operation, and maintenance manuals.

1.7 QUALITY ASSURANCE

- A. Installer Qualifications:
 - 1. Installer's responsibilities include designing, fabricating, and installing standpipe systems.
 - a. Designer Responsibility: Preparation of working plans, calculations, and field test reports by a qualified designer meeting the minimum state requirements.
- B. Welding Qualifications: Qualify procedures and operators according to 2010 ASME Boiler and Pressure Vessel Code.

PART 2 - PRODUCTS

2.1 SYSTEM DESCRIPTIONS

- A. Manual Dry-Type, Class I Standpipe System: Includes NPS 2-1/2 hose connections. Does not have permanent water supply. Piping is dry. Water must be pumped into standpipes to satisfy demand.

2.2 PERFORMANCE REQUIREMENTS

- A. Standpipe system equipment, specialties, accessories, installation, and testing shall comply with NFPA 13 and NFPA 14.
- B. Standard-Pressure Piping System Component: All system components shall be listed for 175-psig minimum working pressure.
- C. Design: provide working drawings meeting the requirements of NFPA 13. The drawings shall be developed from the contract drawings and specifications. Provide general configuration, routing, and sizing as indicated and shall be coordinated with all trades and building components. Pipe sizes shall not be reduced from those indicated.
 - 1. Standpipe system design shall be approved by authorities having jurisdiction.
- D. Seismic Performance: Piping shall withstand the effects of earthquake motions determined according to NFPA 13 and NFPA 14. Refer to structural for design criteria for seismic systems. All components shall be designed and installed per NFPA 14 and/or their listing.
- E. Manufacturers: Subject to compliance with requirements, provide products that are listed and/or approved for use in fire protection systems.

2.3 STEEL PIPE AND FITTINGS

- A. Schedule 40, Black-Steel Pipe: ASTM A 53, A 135, or A 795, with wall thickness not less than Schedule 40. Pipe ends may be factory or field formed to match joining method. Joints shall be threaded, welded, or grooved.
- B. Schedule 10, Black-Steel Pipe: ASTM A 135 or A 795, with wall thickness not less than Schedule 10 for welded and rolled-groove fittings only. Schedule 10 piping shall only be used on wet-pipe systems and piping upstream of the dry-pipe valve.
- C. Black-Steel Pipe Nipples: ASTM A 733, made of ASTM A 53, standard-weight, seamless steel pipe with threaded ends.

- D. Uncoated- Steel Couplings: ASTM A 865, threaded.
- E. Uncoated, Gray-Iron Threaded Fittings: ASME B16.4, Class 125, standard pattern.
- F. Malleable- or Ductile-Iron Unions: UL 860.
- G. Cast-Iron Flanges: ASME 16.1, Class 125.
- H. Steel Flanges and Flanged Fittings: ASME B16.5, Class 150.
 - 1. Pipe-Flange Gasket Materials: AWWA C110, rubber, flat face, 1/8 inch thick, ASME B16.21, nonmetallic and asbestos free or EPDM rubber gasket.
 - a. Class 125 and Class 250, Cast-Iron, Flat-Face Flanges: Full-face gaskets.
 - b. Class 150 and Class 300, Ductile-Iron or -Steel, Raised-Face Flanges: Ring-type gaskets.
 - 2. Metal, Pipe-Flange Bolts and Nuts: Carbon steel unless otherwise indicated.
- I. Steel Welding Fittings: ASTM A 234 and ASME B16.9.
 - 1. Welding Filler Metals: Comply with AWS D10.12M/D10.12 for welding materials appropriate for wall thickness and chemical analysis of steel pipe being welded.
- J. Grooved-Joint, Steel-Pipe Appurtenances:
 - 1. **Manufacturers:** Subject to compliance with requirements, provide products by one of the following:
 - a. [Anvil International, Inc.](#)
 - b. [Tyco Fire & Building Products LP.](#)
 - c. [Victaulic Company](#)
 - 2. Painted Grooved-End Fittings for Steel Piping: ASTM A 47, malleable-iron casting or ASTM A 536, ductile-iron casting, with dimensions matching steel pipe.
 - 3. Grooved-End-Pipe Couplings for Steel Piping: AWWA C606 and UL 213 rigid pattern, unless otherwise indicated, for steel-pipe dimensions. Include ferrous housing sections, EPDM-rubber gasket, and bolts and nuts.

2.4 VALVES

- A. Listed in UL's "Fire Protection Equipment Directory" and FM Global's "Approval Guide."
- B. Body Material: Cast or ductile iron, unless otherwise indicated.
- C. Size: Same as connected piping.

- D. End Connections: Flanged, threaded or grooved.
- E. Check Valves:
1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - a. [Clow Valve Company; a division of McWane, Inc.](#)
 - b. [Globe Fire Sprinkler Corporation.](#)
 - c. [Kennedy Valve; a division of McWane, Inc.](#)
 - d. [Milwaukee Valve Company.](#)
 - e. [NIBCO INC.](#)
 - f. [Tyco Fire & Building Products LP.](#)
 - g. [Victaulic Company.](#)
 - h. [Viking Corporation.](#)
 2. Standard: UL 312.
 3. Type: Swing Check.
- F. OS&Y GATE VALVES
1. Standard: UL 262 and FM Global standard for fire-service water control valves (OS&Y-type gate valves).
 2. Body and Bonnet Material: Cast or ductile iron.
 3. Wedge: Cast or ductile iron, or bronze with elastomeric coating.
 4. Wedge Seat: Cast or ductile iron, or bronze with elastomeric coating.
 5. Stem: Brass or bronze.
 6. Packing: Non-asbestos PTFE.
- G. General Duty Valves:
1. UL Listed: Valves shall be listed in UL's "Online Certifications Directory" under the headings listed below and shall bear UL mark:
 - a. Main Level: HAMV - Fire Main Equipment.
 - 1) Level 1: HLOT - Valves.
 - a) Level 3: HMER - Check Valves.
 - b) Level 3: HMRZ - Gate Valves.
 - b. Main Level: VDGT - Sprinkler System & Water Spray System Devices.
 - 1) Level 1: VQGU - Valves, Trim and Drain.
 2. FM Global Approved: Valves shall be listed in its "Approval Guide," under the headings listed below:
 - a. Automated Sprinkler Systems:
 - 1) Valves.
 - a) Gate valves.
 - b) Check valves.
 - 2) Miscellaneous valves.
 3. Source Limitations for Valves: Obtain valves for each valve type from single manufacturer.
 4. ASME Compliance:

- a. ASME B16.1 for flanges on iron valves.
- b. ASME B1.20.1 for threads for threaded-end valves.
- c. ASME B31.9 for building services piping valves.
5. AWWA Compliance: Comply with AWWA C606 for grooved-end connections.
6. NFPA Compliance: Comply with NFPA 24 for valves.
7. Valve Actuator Types:
 - a. Handwheel: For other than quarter-turn trim and drain valves.
 - b. Handlever: For quarter-turn trim and drain valves NPS 2 and smaller.

2.5 TRIM AND DRAIN VALVES

A. Ball Valves:

1. Description:
 - a. Body Design: Two piece.
 - b. Body Material: Forged brass or bronze.
 - c. Port size: Full or standard.
 - d. Seats: PTFE.
 - e. Stem: Bronze or stainless steel.
 - f. Ball: Chrome-plated brass.
 - g. Actuator: Handlever.

B. Angle Valves:

1. Description:
 - a. Body Material: Brass or bronze.
 - b. Ends: Threaded.
 - c. Stem: Bronze.
 - d. Disc: Bronze.
 - e. Packing: Asbestos free.
 - f. Handwheel: Malleable iron, bronze, or aluminum.

C. Globe Valves:

1. Description:
 - a. Body Material: Bronze with integral seat and screw-in bonnet.
 - b. Ends: Threaded.
 - c. Stem: Bronze.
 - d. Disc Holder and Nut: Bronze.
 - e. Disc Seat: Nitrile.
 - f. Packing: Asbestos free.
 - g. Handwheel: Malleable iron, bronze, or aluminum.

2.6 HOSE CONNECTIONS

A. Nonadjustable-Valve Hose Connections:

1. **Manufacturers:** Subject to compliance with requirements, provide products by one of the following:
 - a. Elkhart Brass Mfg. Co.
 - b. Fire-End & Croker Corp.
 - c. Guardian Fire Equipment
 - d. Kennedy Valve Co.
 - e. Kidde Fire Fighting
 - f. Mueller Co
 - g. Nibco Inc.
 - h. Potter-Roemer LLC
 - i. Type Fire & Building Products
 - j. Viking Corp.
2. Standard: UL 668 hose valve for connecting fire hose.
3. Pressure Rating: 175 psig minimum.
4. Material: Brass or bronze.
5. Size: NPS 2-1/2, as indicated.
6. Inlet: Female pipe threads.
7. Outlet: Male hose threads with lugged cap, gasket, and chain. Include hose valve threads according to NFPA 1963 and matching local fire-department threads.
8. Pattern: Angle or gate.
9. Finish: Rough brass or bronze.

2.7 EXPOSED-TYPE FIRE DEPARTMENT CONNECTION

- A. **Manufacturers:** Subject to compliance with requirements, provide products by one of the following, except where otherwise indicated:
 - a. Elkhart Brass Mfg. Co.
 - b. Guardian Fire Equipment.
 - c. Tyco Fire & Building Products LP.
 - d. Viking Corporation.
- B. Standard: UL 405.
- C. Type: Exposed, projecting, for wall mounting.
- D. Pressure Rating: 175 psig minimum.
- E. Body Material: Corrosion-resistant metal.
- F. Inlets: Brass with threads according to NFPA 1963 and matching local fire-department sizes and threads. Include extension pipe nipples, brass lugged swivel connections, and check devices or clappers.

- G. Caps: Brass, lugged type, with gasket and chain.
- H. Escutcheon Plate: Round, brass, wall type.
- I. Outlet: Back, with pipe threads.
- J. Number of Inlets: Two.
- K. Escutcheon Plate Marking: Similar to "STANDPIPE."
- L. Finish: Polished chrome plated.
- M. Outlet Size: NPS 6.

2.8 ESCUTCHEONS

- A. Split-Casting Brass Type: With polished, chrome-plated (where exposed) and rough-brass finish and with concealed hinge and setscrew.

2.9 SLEEVES

- A. Cast-Iron Wall Pipes: Cast or fabricated of cast or ductile iron and equivalent to ductile-iron pressure pipe, with plain ends and integral waterstop unless otherwise indicated.
- B. Galvanized-Steel Wall Pipes: ASTM A53, Schedule 40, with plain ends and welded steel collar; zinc coated.

2.10 PRESSURE GAGES

- A. Standard: UL 393.
- B. Dial Size: 3-1/2- to 4-1/2-inch diameter.
- C. Pressure Gage Range: 0- to 250-psig.
- D. Label: Include "WATER" or "AIR/WATER" label on dial face.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine roughing-in for hose connections to verify actual locations of piping connections before installation.

- B. Examine walls and partitions for suitable thickness and other conditions where hose connections are to be installed.
- C. Proceed with installation only after unsatisfactory conditions have been corrected

3.2 PIPING INSTALLATION

- A. Locations and Arrangements: Drawing plans and diagrams indicate general location and arrangement of piping. Install piping as indicated.
 - 1. Coordinate layout and installation of sprinklers with other construction that penetrates ceilings, including light fixtures, HVAC equipment, and partition assemblies.
- B. Piping Standard: Comply with the NFPA 14 requirements for installation of standpipe piping.
- C. Dry-Pipe System Piping: slope all piping to a low point drain or back to a standpipe riser with a drain.
- D. Install seismic restraints on piping. Comply with NFPA 13 requirements for seismic-restraint device materials and installation.
- E. Use listed fittings to make changes in direction, branch takeoffs from mains, and reductions in pipe sizes.
- F. Install unions adjacent to each valve in pipes NPS 2 and smaller.
- G. Install flanges, flange adapters, or couplings for grooved-end piping on valves, apparatus, and equipment having NPS 2-1/2 and larger end connections.
- H. Install piping with drains as required for complete system drainage.
- I. Install automatic (ball drip) drain valve at each check valve for fire-department connection, to drain piping between fire-department connection and check valve.
- J. Install hangers and supports for piping according to NFPA 14. Comply with requirements for hanger materials in NFPA 13.
- K. Install pressure gages on riser or feed main and at top of each standpipe. Include pressure gages with connection not less than NPS 1/4 and with soft-metal seated globe valve, arranged for draining pipe between gage and valve. Install gages to permit removal, and install where they are not subject to freezing.
- L. Pressurize and check dry-type standpipe system piping.
- M. Ground piping as required by NFPA 70.

- N. Install sleeves for piping penetrations of walls, ceilings, and floors. Comply with requirements for sleeves.
- O. Install sleeve seals for piping penetrations of concrete walls and slabs.
- P. Install escutcheons for piping penetrations of walls, ceilings, and floors. Comply with requirements for escutcheons.
- Q. Drain dry-type standpipe system piping.

3.3 JOINT CONSTRUCTION

- A. Install couplings, flanges, flanged fittings, unions, nipples, and transition and special fittings that have finish and pressure ratings same as or higher than system's pressure rating for aboveground applications unless otherwise indicated.
- B. Install flanges, flange adapters, or couplings for grooved-end piping on valves, apparatus, and equipment having NPS 2-1/2 and larger end connections.
- C. Ream ends of pipes and tubes and remove burrs. Bevel plain ends of steel pipe.
- D. Remove scale, slag, dirt, and debris from inside and outside of pipes, tubes, and fittings before assembly.
- E. Flanged Joints: Select appropriate gasket material in size, type, and thickness suitable for water service. Join flanges with gasket and bolts according to ASME B31.9.
- F. Threaded Joints: Thread pipe with tapered pipe threads according to ASME B1.20.1. Cut threads full and clean using sharp dies. Ream threaded pipe ends to remove burrs and restore full ID. Join pipe fittings and valves as follows:
 - 1. Apply appropriate tape or thread compound to external pipe threads.
 - 2. Damaged Threads: Do not use pipe or pipe fittings with threads that are corroded or damaged.
- G. Welded Joints: Construct joints according to AWS D10.12M/D10.12, using qualified processes and welding operators according to "Quality Assurance" Article.
 - 1. Shop weld pipe joints where welded piping is indicated. Do not use welded joints for galvanized-steel pipe.
- H. Steel-Piping, Cut-Grooved Joints: Cut square-edge groove in end of pipe according to AWWA C606. Assemble coupling with housing, gasket, lubricant, and bolts. Join steel pipe and grooved-end fittings according to AWWA C606 for steel-pipe joints.

- I. Steel-Piping, Roll-Grooved Joints: Roll rounded-edge groove in end of pipe according to AWWA C606. Assemble coupling with housing, gasket, lubricant, and bolts. Join steel pipe and grooved-end fittings according to AWWA C606 for steel-pipe grooved joints.
- J. Dissimilar-Material Piping Joints: Make joints using adapters compatible with materials of both piping systems.

3.4 HOSE-CONNECTION INSTALLATION

- A. Install hose connections attached to standpipes.
- B. Install freestanding hose connections for access and minimum passage restriction.
- C. Install NPS 2-1/2 hose connections with quick-disconnect NPS 2-1/2 by NPS 1-1/2 reducer adapter.

3.5 VALVE AND SPECIALTIES INSTALLATION

- A. Install listed fire-protection valves, trim and drain valves according to NFPA 13 and NFPA 14 and authorities having jurisdiction.

3.6 IDENTIFICATION

- A. Install labeling and pipe markers on equipment and piping according to requirements in NFPA 14.

3.7 FIRE DEPARTMENT CONNECTION INSTALLATION

- A. Install wall-type fire-department connections.
- B. Install automatic (ball-drip) drain valve at each check valve for fire-department connection.

3.8 FIELD QUALITY CONTROL

- A. Perform the following tests and inspections:
 - 1. Leak Test: After installation, charge systems and test for leaks. Repair leaks and retest until no leaks exist.
 - 2. Flush, test, and inspect systems according to NFPA 14 "Systems Acceptance" Chapter.
 - 3. Verify that equipment hose threads are same as local fire department equipment.

- B. Piping system will be considered defective if it does not pass tests and inspections.
- C. Prepare test and inspection reports.

3.9 CLEANING

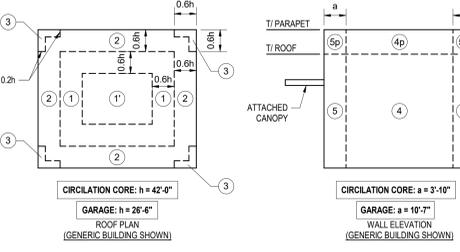
- A. Clean dirt and debris from all piping and valves.

END OF SECTION 21 10 00

GENERAL STRUCTURAL NOTES

DESIGN CRITERIA:

- ALL WORK TO CONFORM TO THE 2024 NORTH CAROLINA STATE BUILDING CODE.
- DEAD LOADS:
STRUCTURE SELF-WEIGHT
GARAGE COLLATERAL LOAD 5 PSF
- LIVE LOADS:
SLAB-ON-GRADE
ELEVATED LEVELS (PASSENGER VEHICLES ONLY) 200 PSF
40 PSF (UNIFORM)
3,000 LBS (CONCENTRATED)
ACTING ON AREA 4.5 N x 4.5
100 PSF
LOBBIES
STAIRS
PASSENGER BRIDGE (LEVEL 2)
MECHANICAL / ELECTRICAL ROOMS
ROOFS 20 PSF
VEHICLE BARRIERS: ALL VEHICULAR IMPACT BARRIERS ALONG THE PERIMETER OF THE PARKING GARAGE AND ALONG INTERIOR RAMPS SHALL BE DESIGNED FOR A 6,000 LB LOAD BETWEEN 16" AND 27" ABOVE FINISHED FLOOR, LOCATED TO PRODUCE THE MAXIMUM LOAD EFFECT. THE LOAD IS APPLIED TO A ONE FOOT SQUARE AREA IN ACCORDANCE WITH SECTION 4.5.3 OF ASCE 7-16.
- RAIN LOADS:
INTENSITY 60 MINUTE / 100 YEAR - 4.53 INCHES / HOUR
2.5 PSF MIN (LEVEL 3)
- SNOW LOADS:
GROUND SNOW LOAD P_g = 10 PSF
- SEISMIC DESIGN DATA (ASCE 7-16):
SEISMIC IMPORTANCE FACTOR I_s = 1.00
MAPPED SPECTRAL RESPONSE ACCELERATIONS SITE CLASSIFICATION SDS = 0.153 & S1 = 0.067
SPECTRAL RESPONSE COEFFICIENTS R = 3.0
SEISMIC DESIGN CATEGORY ANALYSIS PROCEDURE E
EQUIVALENT LATERAL FORCE PROCEDURE
GARAGE SEISMIC-FORCE-RESISTING SYSTEM INTERMEDIATE REINFORCED CONCRETE MOMENT FRAMES
RESPONSE MODIFICATION COEFFICIENT C_s = 5.0
SEISMIC RESPONSE COEFFICIENT C_s = 0.033
DESIGN BASE SHEAR V = C_s * W * WEIGHT
CIRCULATION CORE SEISMIC-FORCE-RESISTING SYSTEM STEEL SYSTEMS NOT SPECIFICALLY DETAILED FOR SEISMIC RESISTANCE
RESPONSE MODIFICATION COEFFICIENT R = 3.0
SEISMIC RESPONSE COEFFICIENT C_s = 0.055
DESIGN BASE SHEAR V = C_s * W * WEIGHT
- WIND DESIGN DATA (ASCE 7-16):
ULTIMATE DESIGN WIND SPEED, V_{ult} (3-SECOND GUST) 145 MPH
NOMINAL DESIGN WIND SPEED, V_{nom} (3-SECOND GUST) 112 MPH
BUILDING RISK CATEGORY II
WIND EXPOSURE C
INTERNAL PRESSURE COEFFICIENT ± 0.18



CIRCULATION CORE						
COMPONENTS AND CLADDING ULTIMATE WIND PRESSURE (PSF)						
ROOFS						
ZONE	EFFECTIVE WIND AREA (SF)					
	≤ 10	20	50	100	200	≥ 500
①	-51.9	-51.9	-51.9	-51.9	-44.7	-35.1
②	-90.3	-84.5	-76.4	-70.6	-64.4	-56.7
③	-119.1	-111.4	-101.4	-93.7	-86.0	-75.9
④	-162.4	-147.0	-126.8	-111.4	-96.1	-75.9
ALL ZONES	23.1	21.6	19.7	18.3	18.3	18.3
WALLS, WINDOWS AND DOORS						
ZONE	EFFECTIVE WIND AREA (SF)					
	≤ 10	20	50	100	200	≥ 500
④	-56.2	-54.0	-51.0	-48.4	-46.3	-43.2
⑤	-69.2	-64.4	-58.4	-54.0	-49.3	-43.2
ALL ZONES	51.9	49.7	46.7	44.1	41.9	38.9
PARAPETS						
ZONE	EFFECTIVE WIND AREA (SF)					
	≤ 10	20	50	100	200	≥ 500
4P	-91.9	-87.5	-81.4	-76.1	-71.7	-65.6
	155.6	145.6	132.3	121.9	111.9	98.7
5P	-105.0	-98.0	-88.8	-81.8	-74.8	-65.6
ALL ZONES	199.3	181.6	158.1	139.9	122.2	98.7

- NOTES:**
- EDGE ZONE (h) IS DISTANCE FROM CORNERS OF BUILDINGS AND IS SHOWN ON GENERIC BUILDING DIAGRAMS ABOVE.
 - POSITIVE AND NEGATIVE SIGNS SIGNIFY PRESSURES ACTING TOWARDS AND AWAY FROM THE BUILDING SURFACES, RESPECTIVELY.
 - FOR EFFECTIVE AREAS BETWEEN VALUES GIVEN, INTERPOLATION MAY BE USED. OTHERWISE USE THE LOWER EFFECTIVE AREA.
 - PRESSURES SHOWN ARE ULTIMATE PRESSURES. MULTIPLY BY 0.6 FOR NOMINAL PRESSURES.
 - CALCULATE NET UPLIFT PRESSURES USING ASCE 7 LOAD COMBINATIONS: 0.6D+0.6W (ASD) OR 0.9D+W (LRFD)

GARAGE						
COMPONENTS AND CLADDING ULTIMATE WIND PRESSURE (PSF)						
ROOFS						
ZONE	EFFECTIVE WIND AREA (SF)					
	≤ 10	20	50	100	200	≥ 1000
①	-47.0	-47.0	-47.0	-47.0	-40.5	-31.8
②	-81.9	-78.7	-69.3	-64.0	-58.4	-51.4
③	-108.0	-101.0	-91.9	-84.9	-78.0	-68.8
④	-147.2	-133.3	-115.0	-101.0	-87.1	-68.8
ALL ZONES	20.9	19.6	17.9	16.6	16.6	16.6
WALLS, WINDOWS AND DOORS						
ZONE	EFFECTIVE WIND AREA (SF)					
	≤ 10	20	50	100	200	≥ 500
④	-51.0	-49.0	-46.3	-43.9	-41.9	-39.2
⑤	-62.7	-58.4	-52.9	-49.0	-44.7	-39.2
ALL ZONES	47.0	45.1	42.3	40.0	38.0	35.3

- GENERAL:**
- NOTES ON THIS AND THE FOLLOWING SHEETS ARE PART OF THE PROJECT REQUIREMENTS BUT ARE NOT INTENDED TO REPLACE THE PROJECT SPECIFICATIONS. IN CASE OF CONFLICTS BETWEEN THE REQUIREMENTS OF THE SPECIFICATIONS AND THESE SHEETS, THE MORE STRINGENT REQUIREMENT SHALL APPLY.
 - THIS STRUCTURAL DOCUMENT, TOGETHER WITH THE CONCEPTS AND DESIGNS, AS AN INSTRUMENT OF SERVICE, ARE INTENDED ONLY FOR THE SPECIFIC PURPOSE AND CLIENT FOR WHICH IT WAS PREPARED. REUSE OF AND IMPROPER RELIANCE ON THIS DOCUMENT WITHOUT WRITTEN AUTHORIZATION AND ADAPTATION BY RS&H ARCHITECTS-ENGINEERS-PLANNERS, INC. (RS&H) SHALL BE WITHOUT LIABILITY TO RS&H.
 - IT IS UNDERSTOOD THAT THE STRUCTURAL ENGINEER OF RECORD MAKES NO WARRANTY, EITHER EXPRESSED OR IMPLIED, AS TO FINDINGS, DESIGNS, RECOMMENDATIONS, SPECIFICATIONS, OPINION OR PROFESSIONAL ADVICE, EXCEPT THAT THESE DOCUMENTS HAVE BEEN PREPARED IN ACCORDANCE WITH THE CURRENT GENERALLY ACCEPTED PROFESSIONAL ENGINEERING PRACTICES.
 - ALL STRUCTURAL MEMBERS SHOWN HEREIN HAVE BEEN DESIGNED FOR THE FINAL DESIGN LOADS PROVIDED IN THIS DOCUMENT IN THE FINAL ERECTED CONDITION SHOWN HEREIN. THE CONTRACTOR IS RESPONSIBLE FOR CONDITIONS ENCOUNTERED DURING ERECTION AND HANDLING, AND NECESSARY TEMPORARY BRACING AND SHORING, SHORING AND BRACING SHALL BE DESIGNED TO PRECLUDE ANY STRUCTURAL ELEMENT FROM BEING OVERSTRESSED AT ANY POINT DURING CONSTRUCTION.
 - CONTRACTOR SHALL VERIFY ALL DIMENSIONS ON JOB SITE WITH COMPLETE SET OF LATEST DRAWINGS. NOTES AND DIMENSIONS SHALL BE CHECKED AND VERIFIED WITH ARCHITECTURAL AND STRUCTURAL DRAWINGS. ANY DISCREPANCIES SHALL BE BROUGHT TO THE ATTENTION OF THE ARCHITECT/ENGINEER BEFORE COMMENCING WORK SO THAT PROPER REMEDIAL WORK CAN BE EXECUTED.
 - CONTRACTOR SHALL REFER TO THE ENGINEER FOR INSTRUCTION FOR ANY DIMENSION NOT GIVEN OR OBTAINABLE FROM THE DRAWINGS. THE CONTRACTOR SHALL NOT USE SCALE TO OBTAIN OR VERIFY ANY DIMENSIONS SHOWN ON THESE DRAWINGS.
 - SEE ARCHITECTURAL, MECHANICAL, ELECTRICAL AND PLUMBING DRAWINGS FOR OPENINGS, SLEEVES, ETC. NOT SHOWN ON STRUCTURAL DRAWINGS. PROVIDE FRAMING OR REINFORCING AT FLOOR AND ROOF OPENINGS. ALL STRUCTURAL OPENINGS AROUND OR AFFECTED BY ARCHITECTURAL, MECHANICAL, ELECTRICAL AND PLUMBING EQUIPMENT SHALL BE VERIFIED WITH THE EQUIPMENT PURCHASED BEFORE PROCEEDING WITH STRUCTURAL WORK AFFECTED.
 - DETAILS AND CONDITIONS NOT SPECIFICALLY SHOWN SHALL BE CONSTRUCTED IN ACCORDANCE WITH DETAILS SHOWN FOR SIMILAR CONDITIONS AND MATERIAL.

- DELEGATED DESIGN SUBMITTALS:**
- DELEGATED DESIGN SUBMITTALS SHALL BE SUBMITTED TO THE BUILDING OFFICIAL AND THE ARCHITECT / ENGINEER AND SHALL BE REVIEWED PRIOR TO INSTALLATION.
 - ALL DELEGATED DESIGN SUBMITTALS SHALL BE SIGNED AND SEALED BY A PROFESSIONAL ENGINEER REGISTERED IN THE STATE OF NORTH CAROLINA.
 - DELEGATED DESIGN SUBMITTALS ARE AS FOLLOWS:
 - COLD-FORMED STEEL FRAMING
 - PRECAST CONCRETE
 - SEGMENTAL RETAINING WALL (SRW)
 - NC DOT BARRIER WALL AND MOMENT SLAB
 - PRE-ENGINEERED ALUMINUM CANOPIES
 - STEEL STAIRS

- CAST-IN-PLACE CONCRETE:**
- ALL CONCRETE SHALL BE DESIGNED PER ACI 318-19.
 - ALL CONCRETE SHALL BE DESIGNED BY AN APPROVED LABORATORY, AND THE DESIGN MIX SHALL SUBMITTED TO THE ARCHITECT/ENGINEER FOR REVIEW AND APPROVAL PRIOR TO USE.
- LOCATION** **STRENGTH (f'_c) @ 28 DAY**
- NORMAL WEIGHT (NWT) CONCRETE**
- | | |
|--------------------|----------|
| ACIP PILES | 5000 PSI |
| SPIRAL FOOTINGS | 5000 PSI |
| PILE CAPS | 5000 PSI |
| GRADE BEAMS | 5000 PSI |
| SLAB-ON-GRADE | 5000 PSI |
| WALLS | 5000 PSI |
| ALL OTHER CONCRETE | 4500 PSI |
- LIGHT WEIGHT (LWT) CONCRETE**
- | | |
|---------------------------------------|----------|
| INTER ELEVATED SLAB ON COMPOSITE DECK | 4000 PSI |
|---------------------------------------|----------|

- NO PIPES OR DUCTS SHALL BE PLACED IN STRUCTURAL CONCRETE UNLESS SPECIFICALLY DETAILED. SEE ARCHITECTURAL AND MECHANICAL DRAWINGS FOR LOCATION OF SLEEVES, MOULDLS, FLOOR HINGES, ETC. TO BE CAST INTO THE CONCRETE.
- EMBEDDED ITEMS THAT WILL SUPPORT STRUCTURAL STEEL CONSTRUCTION SHALL BE PLACED WITHIN THE TOLERANCES PRESCRIBED IN THE LATEST EDITION OF THE AISC "CODE OF STANDARD PRACTICE." FIELD VERIFY LOCATION OF EMBEDDED ITEMS PRIOR TO FABRICATION AND DELIVERY OF STRUCTURAL STEEL TO THE PROJECT SITE.
- ALL EXPOSED EDGES OF CONCRETE SHALL BE CHAMFERED 3/4" UNLESS NOTED OTHERWISE.
- FOR MISCELLANEOUS CONCRETE PADS NOT SHOWN ON THE STRUCTURAL DRAWINGS, SEE ARCHITECTURAL, MECHANICAL, PLUMBING, AND ELECTRICAL.

- REINFORCING STEEL:**
- ALL REINFORCING STEEL SHALL BE ASTM A615, GRADE 60, UNLESS NOTED OTHERWISE.
 - WHERE WELDING IS REQUIRED, REINFORCING STEEL SHALL BE ASTM A706, GRADE 60, AND SHALL BE WELDED WITH E80 ELECTRODES.
 - ALL WELDED WIRE REINFORCING SHALL BE ASTM A1064.
 - SPLICES IN REINFORCING, WHERE PERMITTED, SHALL BE CLASS B TENSION LAP SPLICES, UNLESS NOTED OTHERWISE. REFER TO CONCRETE TENSION LAP SPLICE SCHEDULE ON THIS SHEET.
 - MINIMUM LAP OF WELDED WIRE FABRIC REINFORCING SHALL BE ONE FULL MESH SIZE PLUS 2", OR A LAP OF 6", WHICHEVER IS GREATER.
 - CONCRETE REINFORCING SHALL HAVE THE FOLLOWING MINIMUM CLEAR COVER, UNLESS NOTED OTHERWISE:

AUGER-CAST PILES	3"
PILE CAPS	3" BOTTOM & SIDES, 2" TOP
GRADE BEAMS	3" BOTTOM & SIDES, 2" TOP
FOOTINGS	3" BOTTOM & SIDES, 2" TOP
SLAB-ON-GRADE	2" FROM TOP
CAST-IN-PLACE WALLS	2"
 - DETAILING OF REINFORCING SHALL BE IN ACCORDANCE WITH THE LATEST REVISION OF THE ACI DETAILING MANUAL AND THE LATEST EDITION OF THE CRSI "MANUAL OF STANDARD PRACTICE."
 - ALL REINFORCING SHALL BE HELD SECURELY IN POSITION WITH STANDARD ACCESSORIES IN CONFORMANCE WITH THE CRSI "MANUAL OF STANDARD PRACTICE" DURING PLACEMENT OF CONCRETE.
 - PROVIDE CORNER REINFORCING TO MATCH HORIZONTAL REINFORCING AT ALL CORNERS OF CONTINUOUS FOOTINGS, GRADE BEAMS AND WALLS.
 - ALL HOOKS IN REINFORCING BARS SHALL BE ACI STANDARD 90-DEGREE HOOKS WITH EMBEDMENT INTO CONCRETE GREATER THAN OR EQUAL TO THE DEVELOPMENT LENGTH (l_{dh}) FOR STANDARD 90-DEGREE HOOKS, UNLESS NOTED OTHERWISE. REFER TO THE DEVELOPMENT LENGTH (l_{dh}) SCHEDULE.
 - DOWELS FROM FOUNDATIONS OR SLABS TO WALLS SHALL MATCH WALL REINFORCING, UNLESS NOTED OTHERWISE. DOWELS SHALL BE PLACED BEFORE CONCRETE IS POURED AND SHALL NOT BE PUSHED INTO THE CONCRETE.

- PRECAST STRUCTURAL CONCRETE:**
- ALL CONCRETE SHALL BE DESIGNED PER ACI 318-19.
 - SHOP DRAWINGS SHALL BE SIGNED AND SEALED BY A LICENSED PROFESSIONAL ENGINEER REGISTERED IN THE STATE OF NORTH CAROLINA WHO SHALL BE THE DELEGATED ENGINEER.
 - PRECAST MANUFACTURER SHALL VERIFY SITE, LOCATION AND NUMBER OF FLOOR PENETRATIONS WITH MECHANICAL, PLUMBING AND ELECTRICAL CONTRACTORS.
 - PRECAST CONCRETE DESIGN COMPRESSIVE STRENGTH SHALL BE A MINIMUM 4000 PSI AT 28 DAYS. AT PRECASTER'S OPTION, HIGHER STRENGTH CONCRETE MAY BE USED IN ORDER TO REDUCE THE AMOUNT OF STEEL REINFORCING REQUIRED. SEE SPECIFICATION FOR ADDITIONAL INFORMATION.
 - DIAPHRAGM CHORD REINFORCING SHALL BE DESIGNED AND DETAILED BY THE PRECASTER.

- MASONRY:**
- ALL MASONRY SHALL BE DESIGNED PER THE FOLLOWING:
 - TMS 402-2016 BUILDING CODE FOR MASONRY STRUCTURES
 - TMS 602-2016 SPECIFICATION FOR MASONRY STRUCTURES
 - CONCRETE MASONRY UNITS SHALL CONFORM TO ASTM C90 WITH A NET AREA COMPRESSIVE STRENGTH AS FOLLOWS:
 - 2000 PSI FOR TYPE M OR S
 - MORTAR SHALL CONFORM TO ASTM C270 TYPE S OR M. USE TYPE M BELOW GRADE WHEN MASONRY IS IN CONTACT WITH SOIL.
 - GROUT SHALL CONFORM TO ASTM C476 WITH A MINIMUM COMPRESSIVE STRENGTH OF 3000 PSI GROUT ALL CELLS WITH REINFORCING OR EMBEDDED ANCHORS.
 - MINIMUM COMPRESSIVE STRENGTH OF THE MASONRY (m) SHALL BE 2000 PSI UNLESS NOTED OTHERWISE.
 - REINFORCING STEEL SHALL BE DEFORMED BARS CONFORMING TO ASTM SPECIFICATION A615 GRADE 60.
 - HORIZONTAL JOINT REINFORCING SHALL BE 3 GAGE GALVANIZED LADDER TYPE SPACE JOINT REINFORCING AT A MAXIMUM 16" OC VERTICAL.
 - BOND OF BLOCK SHALL BE RUNNING BOND UNLESS NOTED OTHERWISE.
 - FILL ALL CAVITIES AND CELLS IN MASONRY BELOW FINISHED FLOOR WITH GROUT.
 - REFER TO GENERAL NOTE 4. IF CONTRACTOR'S ENGINEER DETERMINES THAT WALLS REQUIRE TEMPORARY SHORING OR BRACING, WALLS SHALL BE PROPERLY BRACED AGAINST LATERAL LOADS UNTIL THE ROOF DIAPHRAGM OR OTHER LATERAL SUPPORT SYSTEM HAS BEEN INSTALLED.
 - ALL LOAD BEARING MASONRY SHALL BE INSPECTED PER TMS 402.

- AUGER CAST-IN-PLACE PILE FOUNDATIONS:**
- GEOTECHNICAL REPORT BY: S&ME, INC
ILM PARKING DECK
PROJECT NO. 23069158 (REV 1)
NOVEMBER 15, 2024
 - THE GENERAL CONTRACTOR SHALL OBTAIN A COPY OF THE REPORT AND REVIEW THE RECOMMENDATIONS AND REQUIREMENTS INCLUDED THEREIN.
 - THE PARKING STRUCTURE SHALL BE SUPPORTED BY AUGERED CAST-IN-PLACE (ACIP) PILE FOUNDATIONS AS SHOWN ON PLAN, UNLESS NOTED OTHERWISE.
 - NON-PRODUCTION TEST PILES SHALL BE INSTALLED AT THE LOCATIONS DETERMINED BY THE GEOTECHNICAL ENGINEER.
 - THE REQUIRED SERVICE LEVEL CAPACITIES INDICATED IN THE TABLE BELOW SHALL BE VERIFIED BY THE GEOTECHNICAL ENGINEER WITH A LOAD TESTING PROGRAM PRIOR TO PRODUCTION PILE INSTALLATION.
 - MIN CENTER-TO-CENTER PILE SPACING = 3 X DIAMETER.
 - THE MINIMUM 28-DAY GROUT COMPRESSIVE STRENGTH = 5,000 PSI.
 - MINIMUM ALLOWABLE GROUT FACTOR = 1.2
 - SEE SHEET 5601 FOR PILE DETAILS.

ACIP PILE PARAMETERS	18" Ø ACIP PILE
COMPRESSION CAPACITY *	220 KIPS
UPLIFT CAPACITY *	40 KIPS
LATERAL CAPACITY *	22.8 KIPS (1/2" DEFLECTION)
MINIMUM TIP ELEVATION **	42 FT BELOW ELEVATION 86'-0". SEE S112 & S103 FOR DETAILED ELEVATION

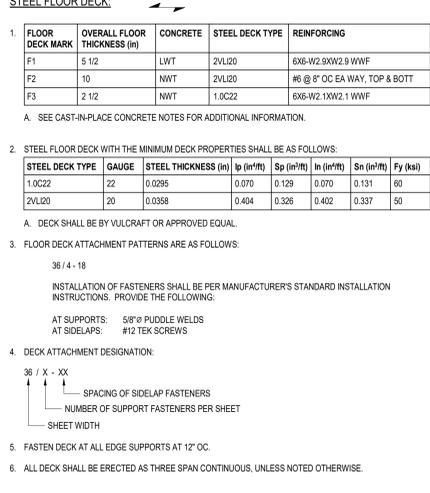
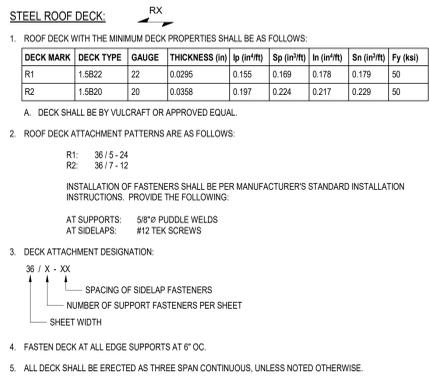
* CAPACITIES INDICATED IN TABLE ARE SERVICE LEVEL
** BASED ON THE GEOTECHNICAL REPORT'S RECOMMENDED MINIMUM TIP ELEVATION BELOW EXISTING GRADE.

- FOUNDATIONS - GENERAL:**
- GEOTECHNICAL REPORT BY: S&ME, INC
ILM PARKING DECK
PROJECT NO. 23069158 (REV 1)
NOVEMBER 15, 2024
 - ALLOWABLE SOIL BEARING PRESSURE: 2000 PSF
 - THE GENERAL CONTRACTOR SHALL OBTAIN A COPY OF THE REPORT AND REVIEW THE RECOMMENDATIONS AND REQUIREMENTS INCLUDED THEREIN.
 - THE GEOTECHNICAL ENGINEER SHALL BE THE SOLE JUDGE AS TO THE SUITABILITY OF UNDERLYING MATERIAL TO SUPPORT FOUNDATIONS AND SHALL APPROVE BEARING CAPACITY PRIOR TO FOUNDATION INSTALLATION.
 - AN INDEPENDENT TESTING AGENCY SHALL INSPECT AND VERIFY COMPACTION OF ALL SUBGRADES AND FILL MATERIALS BEFORE FURTHER CONSTRUCTION WORK IS PERFORMED.
 - IF FOOTINGS SHOWN OCCUR IN A DISTURBED, UNSTABLE OR UNSUITABLE SOIL CONTACT THE GEOTECHNICAL ENGINEER AND STRUCTURAL ENGINEER OF RECORD BEFORE PROCEEDING WITH WORK.
 - ALL FOUNDATIONS SHALL BE FORMED TO PREVENT THE CREATION OF AN ENLARGED AREA OF CONCRETE (MUSHROOM).
 - CONCRETE SHALL BE PLACED IMMEDIATELY AFTER FOOTING EXCAVATION AND PLACEMENT OF REINFORCING STEEL TO AVOID BEARING SOILS EXPOSURE TO WETTING AND DRYING. ANY WATER SHALL BE PUMPED OUT OF THE FOOTING EXCAVATION PRIOR TO PLACEMENT OF CONCRETE.

- EARTHWORK:**
- SITE PREPARATION**
- CLEARING AND STRIPPING SHALL CONSIST OF REMOVING VEGETATION, TOPSOIL, ROOT MATS, DEBRIS, AND OTHER DELETERIOUS MATERIAL IN THEIR ENTIRETY. STRIPPING SHALL EXTEND AT LEAST 10 FEET BEYOND THE PROPOSED BUILDING FOOTPRINT, WHERE PRACTICAL.
 - AFTER EXCAVATION TO FINAL FOOTING ELEVATIONS, PERFORM AT LEAST ONE TEST PER SOIL STRATUM TO VERIFY ALLOWABLE DESIGN BEARING CAPACITIES.
 - ANY EXPOSED SUBGRADE SOILS THAT ARE FOUND TO BE UNSTABLE OR UNSUITABLE SHALL BE REMOVED IN THEIR ENTIRETY AND REPLACED WITH COMPACTED STRUCTURAL FILL.
 - THE UPPER 12 INCHES (AS A MINIMUM) OF NEWLY EXPOSED SUBGRADE SOILS SHALL BE RECOMPACTED TO 98 PERCENT OF THE STANDARD PROCTOR (ASTM D698) MAXIMUM DRY DENSITY AT OPTIMUM MOISTURE CONTENT.
 - FOUNDATION BEARING SURFACES AND FLOOR SLAB SUBGRADES SHALL BE PROTECTED FROM EXPOSURE TO WATER PRIOR TO INSTALLATION OF ENGINEERED FILL AND CONCRETE. WATER RUNOFF SHALL NOT BE PERMITTED TO COLLECT IN THE FOOTING EXCAVATIONS OR WITHIN THE BUILDING FOOTPRINT. SOILS SOFTENED OR LOOSENED BY POWDERY WATER OR DISTURBED BY CONSTRUCTION ACTIVITIES SHALL BE REMOVED AND REPLACED WITH COMPACTED ENGINEERED FILL.
 - FILL SHALL NOT BE PLACED IN A FROZEN CONDITION OR UPON A FROZEN SUBGRADE. FROZEN MATERIALS SHALL NOT BE USED AS ENGINEERED FILL AND NO FILL, FOOTINGS OR SLAB SHALL BE PLACED ON SOILS THAT ARE FROZEN OR CONTAIN FROZEN MATERIAL.

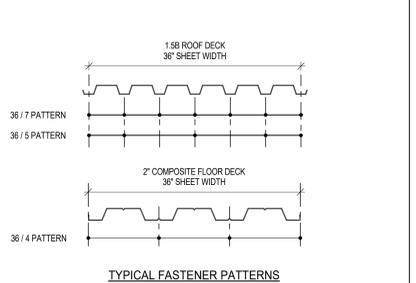
- ENGINEERED FILL AND COMPACTION**
- ENGINEERED FILL SHALL BE A CLEAN GRANULAR FILL FREE OF ORGANICS, OR ANY OTHER UNSUITABLE MATERIAL WITH A PLASTICITY INDEX (PI) OF 6 PERCENT OR LESS (ASTM D4318). SILT/CLAY FINES CONTENT NOT GREATER THAN 25 PERCENT BY WEIGHT (ASTM D140). MOISTURE CONTENT WITHIN 3 PERCENT, PLUS OR MINUS, OF THE STANDARD PROCTOR (ASTM D698) AT OPTIMUM MOISTURE CONTENT (ASTM D2161)
 - ENGINEERED FILL SHALL BE APPROVED BY A QUALIFIED GEOTECHNICAL ENGINEER.
 - ENGINEERED FILL SHALL BE PLACED IN LOOSE LIFTS NOT EXCEEDING 12 INCHES FOR MATERIAL COMPACTED BY HEAVY COMPACTION EQUIPMENT AND 4 TO 6 INCHES FOR MATERIAL COMPACTED BY SMALL WALK-BEHIND COMPACTION EQUIPMENT.
 - ENGINEERED FILL SHALL BE COMPACTED TO 98 PERCENT OF THE STANDARD PROCTOR (ASTM D698) MAXIMUM DRY DENSITY AT OPTIMUM MOISTURE CONTENT.
 - THE UPPER 12 INCHES OF SUBGRADE IN FOOTING, SLAB AND PAVEMENT AREAS SHALL BE COMPACTED TO 98 PERCENT OF THE STANDARD PROCTOR (ASTM D698) MAXIMUM DRY DENSITY AT OPTIMUM MOISTURE CONTENT.
 - IN-PLACE DENSITY TESTS SHALL BE PERFORMED BY A QUALIFIED GEOTECHNICAL ENGINEER.

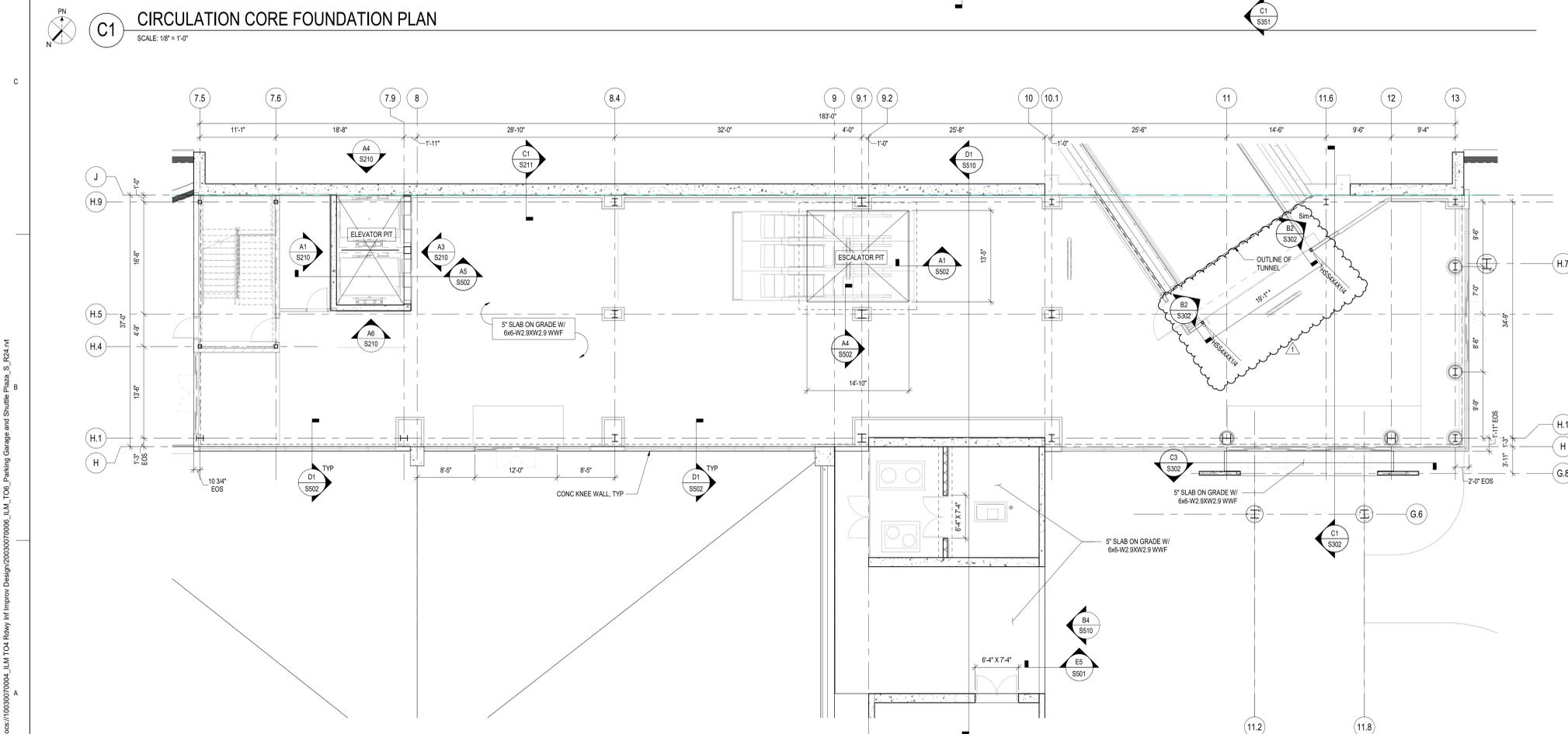
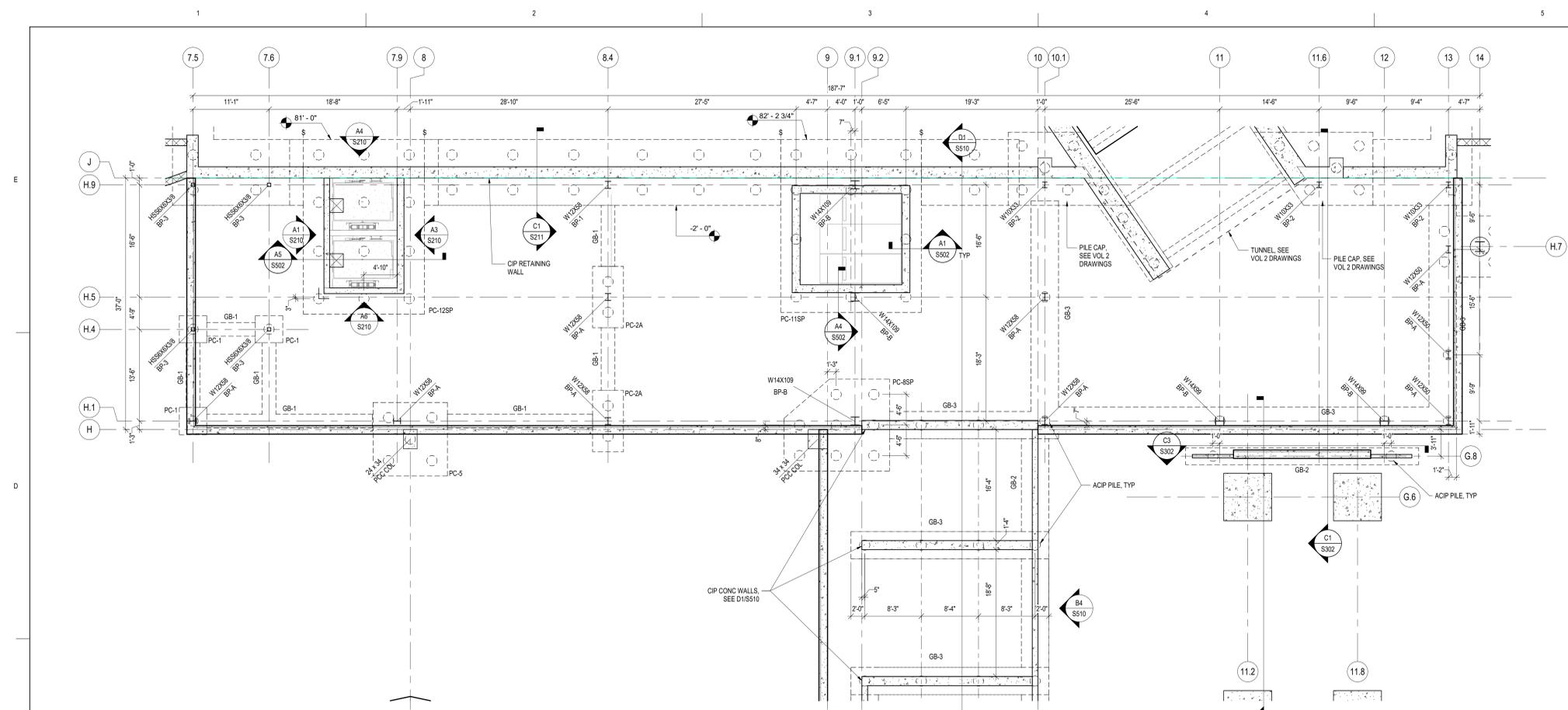
- STRUCTURAL STEEL:**
- STRUCTURAL STEEL SHALL BE DESIGNED PER AISC 360-16. MATERIALS SHALL BE AS FOLLOWS:
 - W-SHAPES ASTM A992, F_y = 50 KSI
 - HSS SHAPES (RECT) ASTM A500 GRADE C, F_y = 50 KSI
 - HSS SHAPES (ROUND) ASTM A500 GRADE C, F_y = 46 KSI
 - PLATES ASTM A58, F_y = 36 KSI
 - ASTM A572, F_y = 50 KSI
 - ASTM A36, F_y = 36 KSI
 - ALL OTHER STEEL
 - ALL BOLTS SHALL BE 3/4" ASTM A325 AND SHALL BE SNUG TIGHTENED, UNLESS NOTED OTHERWISE.
 - ALL ANCHOR RODS SHALL BE ASTM F1554 GRADE 36, UNLESS NOTED OTHERWISE.
 - BEAM-TO-BEAM AND BEAM-TO-COLUMN CONNECTIONS SHALL BE AS SHOWN ON DETAIL A415S33, UNLESS NOTED OTHERWISE. BEAM-TO-HSS COLUMN SHALL BE AS SHOWN ON DETAIL A415S33, UNLESS NOTED OTHERWISE.
 - ALL WELDING SHALL BE PERFORMED BY CERTIFIED WELDERS AND SHALL CONFORM TO ANSII AWS D1.1.
 - MINIMUM SIZE OF ALL FILLET WELDS SHALL CONFORM TO TABLE J2.4 OF AISC SPECIFICATIONS EVEN IF SHOWN OTHERWISE ON ARCHITECTURAL, MECHANICAL, OR STRUCTURAL DRAWINGS.
 - STRUCTURAL STEEL NOT ENCASED IN CONCRETE, MASONRY, OR SPRAY APPLIED FIRE PROOFING SHALL BE SHOP PAINTED AS SPECIFIED. ANY ABRASIONS SHALL BE TOUCHED UP AFTER ERECTION.
 - STRUCTURAL STEEL EXPOSED TO WEATHER IN FINISHED STRUCTURE SHALL BE HOT DIP GALVANIZED PER ASTM A123.
 - ALL EXPOSED STRUCTURAL STEEL, WHERE INDICATED ON PLAN, SHALL BE FABRICATED AND STEREOED PER SECTION 10, "ARCHITECTURALLY EXPOSED STRUCTURAL STEEL," OF THE AISC CODE OF STANDARD PRACTICE.
 - FABRICATOR SHALL SUBMIT SHOP DRAWINGS TO STRUCTURAL ENGINEER FOR REVIEW PRIOR TO START OF FABRICATION. FABRICATION SHALL CONFORM TO AISC SPECIFICATIONS.
 - STRUCTURAL GROUT FOR STEEL COLUMNS SHALL BE A NON-SHRINK, NON-EXPANSIVE, NON-METALLIC GROUT WITH A MINIMUM 28 DAY COMPRESSIVE STRENGTH OF 5,000 PSI WHEN TESTED IN ACCORDANCE WITH ASTM C109.
 - UNLESS OTHERWISE DETAILED IN THE STRUCTURAL DRAWINGS, ALL METAL PAN STAIRS AND LANDINGS SHALL BE DESIGNED BASED ON THE GEOMETRY AND DETAILS PROVIDED IN THE ARCHITECTURAL PLANS AND SHALL BE DESIGNED BY A PROFESSIONAL ENGINEER REGISTERED IN THE STATE OF NORTH CAROLINA, UNLESS NOTED OTHERWISE. SIGNED AND SEALED CALCULATIONS SHALL BE PROVIDED THAT CLEARLY DEPICT THE LOADS TRANSMITTED TO THE SUPPORTING STRUCTURAL MEMBERS.
 - FLOOR FRAMING HAS BEEN DESIGNED TO LIMIT DEFLECTION TO L/360 UNDER THE WEIGHT OF CONCRETE PLACEMENT.



- COLD-FORMED METAL FRAMING:**
- ALL COLD FORMED METAL FRAMING SHALL BE DESIGNED PER AISI 100 - 16(2020) W/S2-20. NORTH AMERICAN SPECIFICATION FOR THE DESIGN OF COLD FORMED STEEL STRUCTURAL MEMBERS, 2016 EDITION (REAFFIRMED 2020) WITH SUPPLEMENT 2, 2020 EDITION.
 - THE MANUFACTURER SHALL BE RESPONSIBLE FOR THE DESIGN OF THE COLD-FORMED STEEL FRAMING SYSTEM INCLUDING SIZE, GAUGE, STRENGTH, SPACING OF MEMBERS, ANCHORAGE TO STRUCTURE, CONNECTIONS, ANGLES, CLIPS, BRACING, STRAPPING, BRIDGING, SUPPLEMENTARY FRAMING, FRAMING AT OPENINGS AND AT EXPANSION JOINTS.
 - SUBMITTALS SHALL CLEARLY IDENTIFY ALL APPLICABLE CODES. LIST THE DESIGN CRITERIA AND SHOW ALL DETAILS AND DRAWINGS NECESSARY FOR PROPER FABRICATION AND INSTALLATION.
 - SHOP DRAWINGS AND CALCULATIONS SHALL BE SIGNED AND SEALED BY A LICENSED PROFESSIONAL ENGINEER REGISTERED IN THE STATE OF NORTH CAROLINA WHO SHALL BE THE DELEGATED ENGINEER.
 - THE FRAMING SYSTEM SHALL BE DESIGNED TO RESIST ALL APPLIED LOADINGS INCLUDING GRAVITY LOADS, CONSTRUCTION LOADS, WIND LOADS (HORIZONTAL AND VERTICAL) AND ALL OTHER LOADS AS REQUIRED BY THE APPLICABLE BUILDING CODES.
 - THE FRAMING SYSTEM SHALL ACCOUNT FOR MOVEMENT OF THE STRUCTURE AND OTHER COMPONENTS, INCLUDING, BUT NOT LIMITED TO, DEFLECTION OF THE PRIMARY STRUCTURE, CONSTRUCTION TOLERANCES AND MAINTAINING REQUIRED CLEARANCE AT OPENINGS.

- POST-INSTALLED ANCHORS:**
- POST-INSTALLED ANCHOR MANUFACTURER, LOCATION, TYPE, DIAMETER, EMBEDMENT, AND EDGE DISTANCES SHALL BE AS INDICATED ON DRAWINGS. ANCHOR EMBEDMENT DEPTH IS MEASURED FROM THE SURFACE OF THE BASE MATERIAL.
 - SUBSTITUTIONS ARE NOT PERMITTED WITHOUT WRITTEN APPROVAL FROM THE ENGINEER OF RECORD.
 - INSTALLATION OF ANCHORS SHALL BE IN STRICT ACCORDANCE WITH THE MANUFACTURER'S WRITTEN INSTALLATION INSTRUCTIONS AND BE PERFORMED BY AN INSTALLER TRAINED BY THE MANUFACTURER.
 - POST-INSTALLED ANCHORS SHALL HAVE A CURRENT ICC-ES REPORT AND BE APPROVED FOR USE IN CRACKED AND UNCRACKED CONCRETE.
 - THE CONCRETE SHALL HAVE ATTAINED ITS MINIMUM DESIGN STRENGTH PRIOR TO INSTALLATION OF THE ANCHORS.
 - EXISTING REINFORCING STEEL SHALL NOT BE CUT OR DAMAGED. LOCATE EXISTING BARS BY NON-DESTRUCTIVE MEANS PRIOR TO DRILLING HOLES FOR ANCHORS. NOTIFY ENGINEER IF ANCHORS LOCATIONS CONFLICT WITH EXISTING REINFORCING.





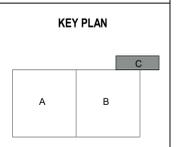
- CIRCULATION CORE FOUNDATION SHEET NOTES**
- DATUM ELEVATION 29.7' EQUALS REFERENCE ELEVATION 86'-0", UNLESS NOTED OTHERWISE.
 - TI PILE CAP EQUALS ELEVATION 84'-0", UNLESS NOTED OTHERWISE.
 - "PC" INDICATES PILE CAP TYPE. SEE S501 FOR PILE CAP SCHEDULE & DETAILS.
 - "GB" INDICATES GRADE BEAM TYPE. SEE S502 FOR GRADE BEAM SCHEDULE & DETAILS.
 - PILE CAPS SHALL BE CENTERED ON PRECAST CONCRETE COLUMNS AND WALLS, UNLESS NOTED OTHERWISE.
 - GRADE BEAM REINFORCEMENT SHALL BE CONTINUOUS THROUGH PILE CAPS.
 - 69- INDICATES STEP IN SLAB. SEE PLAN.
 - SEE C1/S501 FOR TYPICAL COLUMN-PILE CAP SECTION.
 - SEE C3/S501 FOR TYPICAL SHEAR WALL-PILE CAP SECTION.
 - SEE C4/S501 FOR TYPICAL STEEL COLUMN BASE CONNECTION.

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PROJECT TITLE:
ILM AIRPORT BOULEVARD AND
PARKING IMPROVEMENTS - PHASE
II

PROJECT ADDRESS:
1740 AIRPORT BLVD.
WILMINGTON, NC 28405



- CIRCULATION CORE SLAB ON GRADE SHEET NOTES**
- DATUM ELEVATION 29.7' EQUALS REFERENCE ELEVATION 86'-0", UNLESS NOTED OTHERWISE. SEE SHEET S501 FOR TYPICAL SLAB DETAILS.
 - PROVIDE VAPOR BARRIER AND DRAINAGE LAYER PER E3/S501.
 - PROVIDE CRACK CONTROL JOINTS IN SLAB-ON-GRADE ALONG COLUMN LINES & EQUALLY SPACED BETWEEN COLUMN LINES AS SHOWN. SEE S501 FOR TYPICAL SLAB-ON-GRADE JOINT DETAILS.
 - PROVIDE (2) #4 X 4'-0" LONG BARS IN SLAB AT ALL RE-ENTRANT CORNERS, PLACED AT 45 DEGREES, TYPICAL.
 - PROVIDE THICKENED SLAB EDGE AT ALL EDGE OF SLAB CONDITIONS, UNLESS NOTED OTHERWISE. SEE S501.
 - CONCRETE SHALL BE PLACED IN ACCORDANCE WITH SLAB DRAWINGS.
 - * DENOTES COORDINATION OF HSS POST REQUIRED WITH OVERHEAD DOOR PROVIDED.

REVISIONS

NO.	DESCRIPTION	DATE
1	Addendum 1	4/10/2025

DATE ISSUED: 03/14/2025
REVIEWED BY: MCM
DRAWN BY: DFW
DESIGNED BY: DFW
PROJECT NUMBER:
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SHEET TITLE:
CIRCULATION CORE
FOUNDATION AND
SLAB ON GRADE
PLANS

SHEET ID:
S141

PROJECT STATUS:
100% BID SET



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CIRCULATION CORE ELEVATED FLOORS SHEET NOTES

1. T/ STEEL 2ND FLOOR ELEVATION = 107'-0 1/2" UNO ON PLAN.
2. T/ STEEL LOW ROOF ELEVATION = 102'-0 1/2" UNO ON PLAN.
3. T/ STEEL 3RD FLOOR ELEVATION = 112'-0 1/2" UNO ON PLAN.
4. T/ STEEL HIGH ROOF ELEVATION = 127'-0 1/2" UNO ON PLAN.
5. **FK** INDICATES FLOOR DECK TYPE. SEE GENERAL NOTES S001.
6. **RM** INDICATES ROOF DECK TYPE. SEE GENERAL NOTES S001.
7. SEE E45S32 FOR TYPICAL ROOF OPENING FRAMING.
8. SLOPE CONCRETE SLAB UP FOR A TOTAL THICKNESS OF 12" AT RETAINING WALL.

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Hartrant
 Lighting
 Design

ILM

PROJECT TITLE:
 ILM AIRPORT BOULEVARD AND
 PARKING IMPROVEMENTS - PHASE
 II

PROJECT ADDRESS:
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KEY PLAN

REVISIONS

NO.	DESCRIPTION	DATE
1	Addendum 1	4/10/2025

DATE ISSUED: 03/14/2025
REVIEWED BY: MCM
DRAWN BY: DFW
DESIGNED BY: DFW

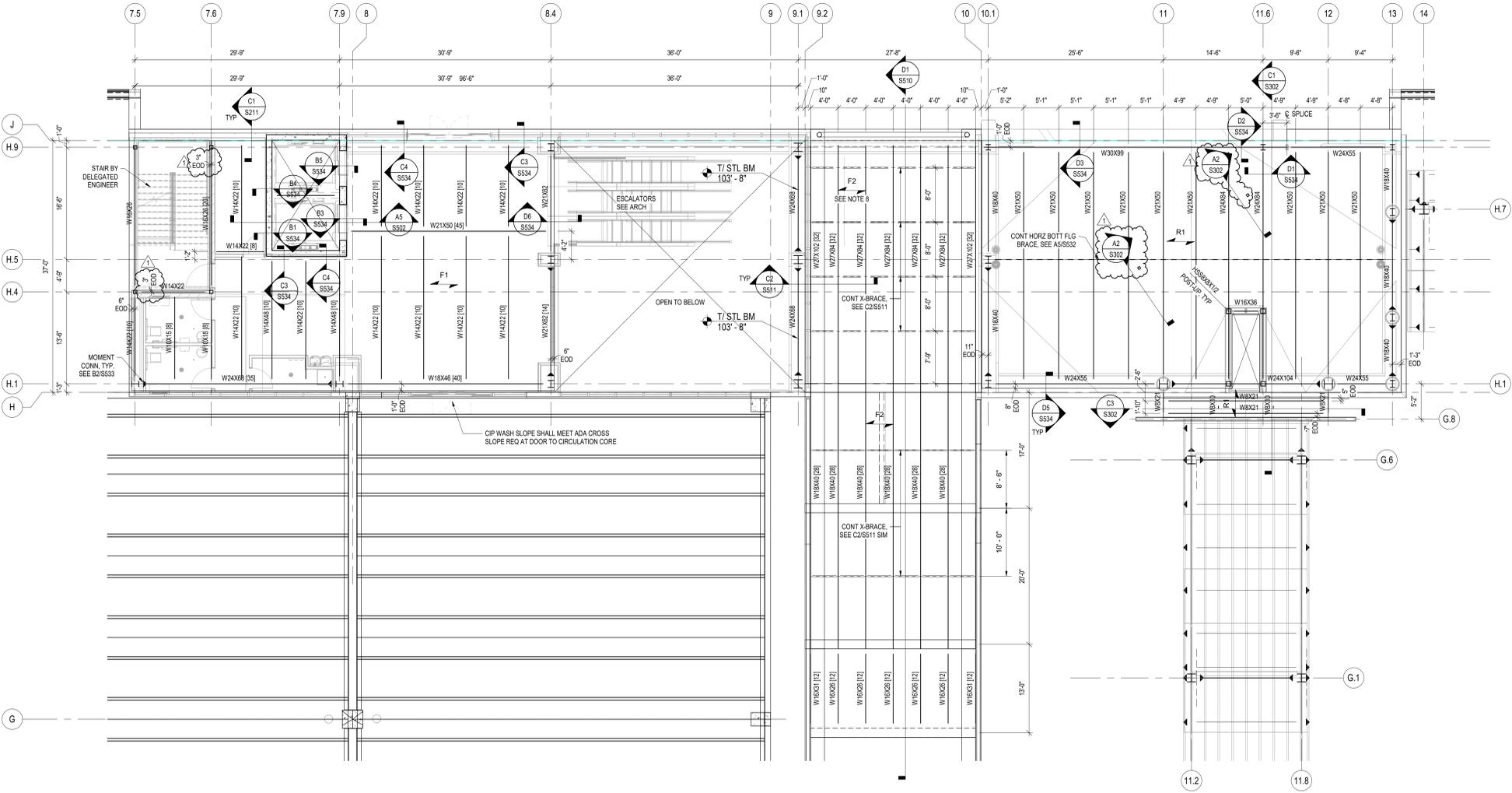
PROJECT NUMBER:
 2003-0070-006
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SHEET TITLE:
 CIRCULATION CORE
 2ND, 3RD, AND ROOF
 FRAMING PLANS

SHEET ID:
S142

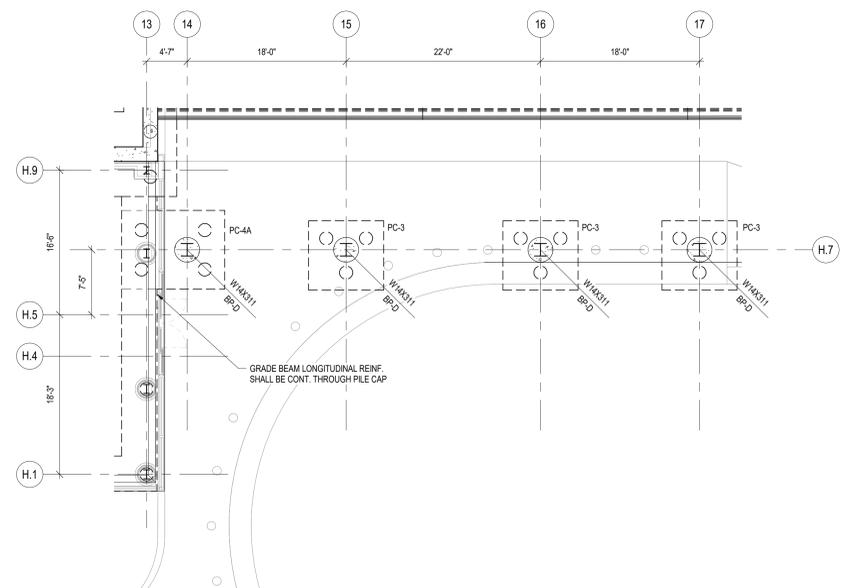
PROJECT STATUS:
 100% BID SET



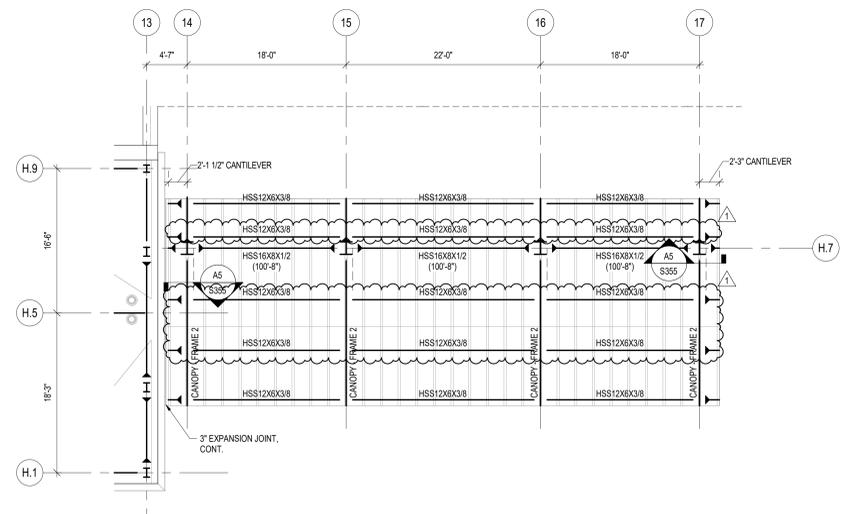
CANOPY DESIGN CRITERIA:

DESIGN PER:
2024 NORTH CAROLINA STATE BUILDING CODE

- DEAD LOADS:
SELFWEIGHT + ROOF ASSEMBLY
CANOPY COLLATERAL 6 PSF
- LIVE LOADS (PER ASCE 7-16):
ROOF 20 PSF
- WIND LOADS (PER ASCE 7-16):
ULTIMATE DESIGN WIND SPEED, V_u 145 MPH
NOMINAL DESIGN WIND SPEED, V_w 112 MPH
RISK CATEGORY II
WIND EXPOSURE CATEGORY C
INTERNAL PRESSURE COEFFICIENT ± 0.00
COMPONENTS AND CLADDING WIND PRESSURES SEE AS/S151 & D1/S156
HURRICANE-PRONE REGION YES; GLAZED OPENINGS SHALL BE PROTECTED AGAINST WIND-BORNE DEBRIS
- EARTHQUAKE DESIGN DATA (PER ASCE 7-16):
SEISMIC IMPORTANCE FACTOR $I_e = 1.00$
MAPPED SPECTRAL RESPONSE ACCELERATIONS $S_s = 0.153$
MAPPED SPECTRAL RESPONSE ACCELERATIONS $S_1 = 0.067$
SPECTRAL RESPONSE COEFFICIENT $S_{ol} = 0.153$
SPECTRAL RESPONSE COEFFICIENT $S_{ol} = 0.100$
SITE CLASS D
SEISMIC DESIGN CATEGORY B
BASIC SEISMIC FORCE-RESISTING SYSTEMS STEEL SYSTEMS NOT SPECIFICALLY DETAILED FOR SEISMIC RESISTANCE
RESPONSE MODIFICATION COEFFICIENT $R = 3$
SEISMIC RESPONSE COEFFICIENT $C_s = 0.054$
DESIGN BASE SHEAR $V = 2.59$ KIP
ANALYSIS DESIGN PROCEDURE EQUIVALENT LATERAL FORCE PROCEDURE
- SNOW LOADS (PER ASCE 7-16):
GROUND SNOW LOAD $P_g = 10$ PSF
FLAT ROOF SNOW LOAD $P_f = 9.24$ PSF
SNOW EXPOSURE FACTOR $C_e = 1.0$
SNOW LOAD IMPORTANCE FACTOR $I_s = 1.1$
THERMAL FACTOR $C_t = 1.2$
DRIFT SURCHARGE LOADS SEE CS/S151
WIDTH OF SNOW DRIFT SEE CS/S151
- RAIN INTENSITY (PER NOAA):
PRECIPITATION INTENSITY (15-MINUTE) $i_{15} = 8.59$ IN/HR
PRECIPITATION INTENSITY (60-MINUTE) $i_{60} = 4.83$ IN/HR
- FOUNDATION SYSTEM:
SHALLOW FOUNDATION SYSTEM ALLOWABLE BEARING PRESSURE 2000 PSF
DEEP FOUNDATION SYSTEM AUGER CAST PILES (ACP) SEE S001 & S601



C2 DROP-OFF CANOPY FOUNDATION PLAN
SCALE: 1/8" = 1'-0"



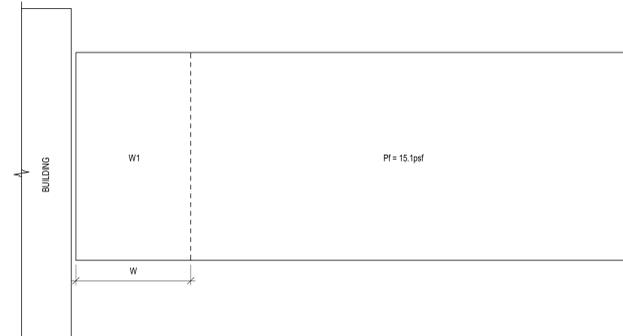
A2 DROP-OFF CANOPY FRAMING PLAN
SCALE: 1/8" = 1'-0"

PLAN LEGEND AND SHEET NOTES

DESCRIPTION	SYMBOL
1. CONCRETE COLUMN WRAP, SEE DETAIL A5/S152	
2. STEEL COLUMN: A. COLUMN SIZE WXXXX# SEE PLAN B. BASE PLATE BP#, SEE SCHEDULE A1/S532	
3. STEEL FRAMING: A. BEAM SIZE WXXXX# B. TOP OF STEEL (###-#)	
4. MOMENT CONNECTION B3/S355	
5. PILE CAP FOUNDATION PC#, SEE SCHEDULE D3/S601	

FRAMING PLAN NOTES

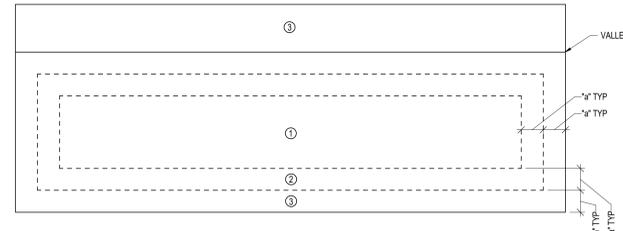
- CANOPY STEEL FRAMING: A1/S351
- TOP OF DROPOFF PILE CAP FOUNDATION ELEVATION = 84'-0", UNO
- COLUMN CONCRETE WRAPS FOR CANOPY COLUMNS SHALL BE TYPE-2, SEE DETAIL A5/S152



SNOW DRIFT SURCHARGE		
MARK	DRIFT WIDTH (W)	DRIFT LOAD SURCHARGE (P _d)
W1	14'-0"	56.0 PSF

- NOTES:**
- SNOW PRESSURES SHOWN ARE SERVICE PER ASCE 7-16
 - P_d (PSF) DENOTES BALANCED SNOW LOAD PER ASCE 7-16
 - SNOW DRIFT LOAD CONFIGURATION PER ASCE

C5 SNOW DRIFT LOAD DIAGRAM
SCALE: N.T.S.



ZONE	a = 3'-0"	EFFECTIVE WIND AREA				
		10 SF	50 SF	100 SF	200 SF	500 SF
ROOF	ALL ZONES	+85.3	+56.9	+56.9	+56.9	+56.9
	ZONE 1	-54.9	-54.9	-54.9	-54.9	-54.9
	ZONE 2	-83.1	-54.9	-54.9	-54.9	-54.9
	ZONE 3	-83.1	-54.9	-54.9	-54.9	-54.9

- NOTES:**
- ALL WIND LOADS SHOWN ARE ULTIMATE PER ASCE 7-16 WITH UNITS IN PSF.
 - PLUS AND MINUS SIGNS SIGNIFY PRESSURES ACTING TOWARDS AND AWAY FROM THE SURFACES, RESPECTIVELY.
 - EACH COMPONENT MUST BE DESIGNED FOR MAXIMUM POSITIVE AND NEGATIVE PRESSURES.
 - EDGE ZONE (Z₁) IS DISTANCE FROM CORNERS OF BUILDINGS.
 - FOR EFFECTIVE AREAS BETWEEN VALUES GIVEN, INTERPOLATION MAY BE USED, OTHERWISE, USE THE LOWER EFFECTIVE AREA.

A5 DROP-OFF CANOPY COMPONENTS AND CLADDING WIND PRESSURES
SCALE: N.T.S.

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PROJECT TITLE:
ILM AIRPORT BOULEVARD AND PARKING IMPROVEMENTS - PHASE II

PROJECT ADDRESS:
1740 AIRPORT BLVD.
WILMINGTON, NC 28405

REVISIONS

NO.	DESCRIPTION	DATE
1	Addendum 1	4/10/2025

DATE ISSUED: 03/14/2025
REVIEWED BY: MCM
DRAWN BY: DFW
DESIGNED BY: DFW

PROJECT NUMBER:
2003-0070-006
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SHEET TITLE:
CANOPY DESIGN
CRITERIA, DROP-OFF
CANOPY PLANS

SHEET ID:

S151

PROJECT STATUS:
100% BID SET



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REVISIONS

NO.	DESCRIPTION	DATE
1	ADDENDUM #1	04/10/2025

DATE ISSUED: 03/14/2025
 REVIEWED BY: SG
 DRAWN BY: KS
 DESIGNED BY: FG
 PROJECT NUMBER:
 2003-0070-006
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SHEET TITLE:
 OVERALL GROUND
 FLOOR PLAN

SHEET ID:
A101

PROJECT STATUS:
 100% BID SET

PARKING TOTALS

LEVEL 1 *FIRST LEVEL PARKING BY RENTAL CAR AGENCY*			
TYPE	LENGTH	WIDTH	COUNT
ACCESSIBLE STANDARD	18'-0"	9'-0"	5
ACCESSIBLE VAN	18'-0"	11'-0"	3
STANDARD	18'-0"	9'-0"	292
TOTAL LEVEL 1			300

LEVEL 2			
TYPE	LENGTH	WIDTH	COUNT
ACCESSIBLE STANDARD	18'-0"	9'-0"	4
ACCESSIBLE VAN	18'-0"	11'-0"	3
STANDARD	18'-0"	9'-0"	307
TOTAL LEVEL 2			314

LEVEL 3			
TYPE	LENGTH	WIDTH	COUNT
ACCESSIBLE STANDARD	18'-0"	9'-0"	4
ACCESSIBLE VAN	18'-0"	11'-0"	3
STANDARD	18'-0"	9'-0"	307
TOTAL LEVEL 3			314

GRAND TOTAL			615
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FLOOR PLAN LEGEND & SHEET NOTES

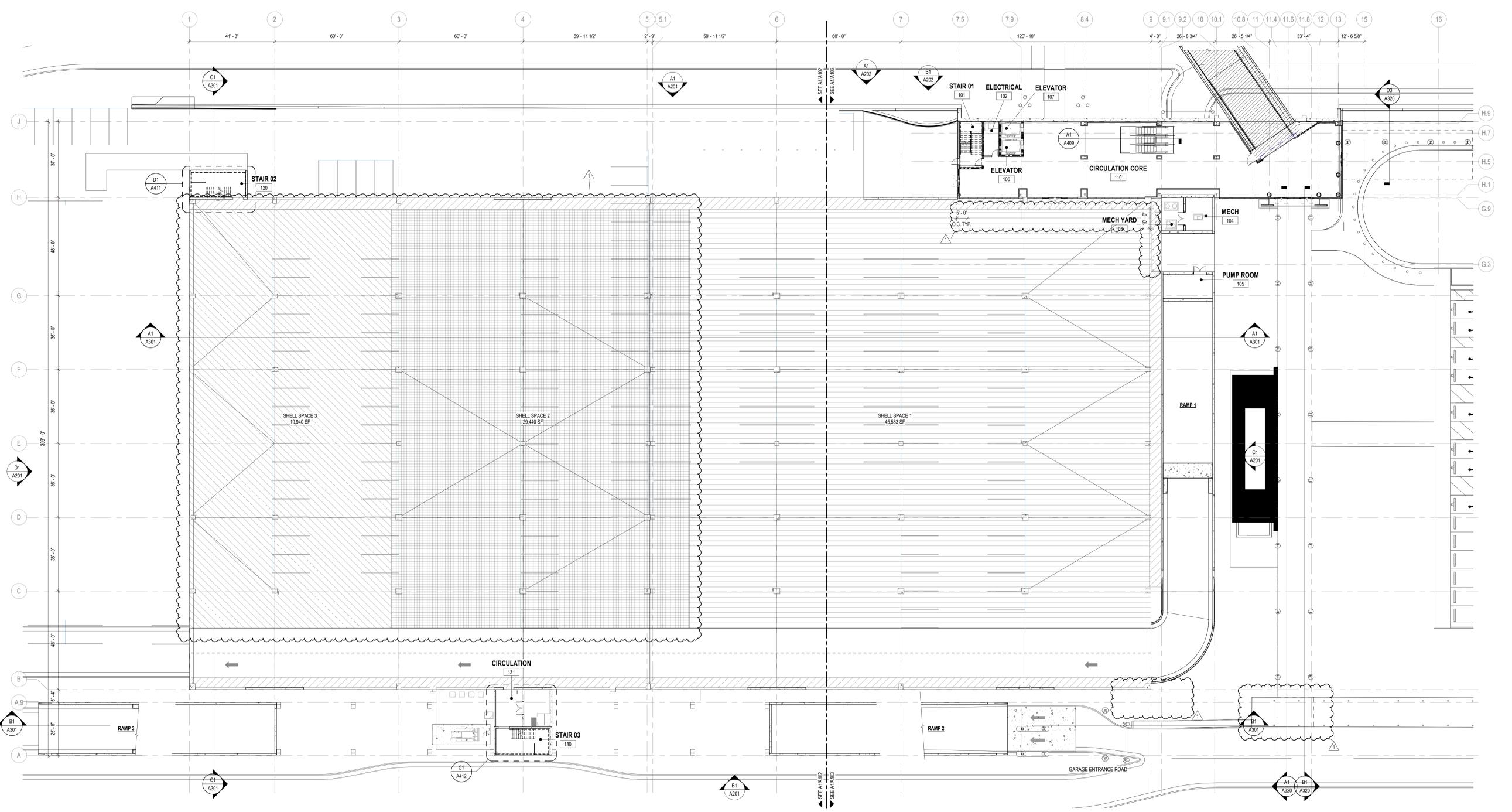
PARTITION LEGEND

- NON-RATED WALL SYSTEM
- 1-HOUR RATED WALL SYSTEM
- 3-HOUR RATED WALL SYSTEM
- PRECAST OR C.I.P. CONCRETE WALL SYSTEM
- CONCRETE MASONRY UNIT WALL SYSTEM

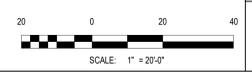
NOTE: REFER TO PARTITION TAGS ON PLANS AND PARTITION TYPE DETAILS.
 REFER TO VOLUME 2 PACKAGE

GENERAL SHEET NOTES

- ALL EXTERIOR WALLS TO BE DIMENSIONED TO THE FACE OF SHEATHING OR CONCRETE U.N.O.
- ALL INTERIOR WALLS TO BE DIMENSIONED TO THE FACE OF STUD U.N.O.
- SEE ENLARGED PLANS FOR PARTITION TAGS NOT IDENTIFIED ON OVERALL FLOOR PLANS.
- PROVIDE 5/8" WATER-RESISTANT GWB IN LIEU OF TYPICAL GWB AT ALL WET AREAS INCLUDING, BUT NOT LIMITED TO:
 - RESTROOMS
 - JANITOR CLOSETS
 - EXTEND SMOKE BARRIER PARTITION WALLS TO BOTTOM OF UPPER FLOOR STRUCTURE.
- FIELD VERIFY ALL DIMENSIONS, REPORT ANY DISCREPANCIES TO THE ARCHITECT FOR CLARIFICATION PRIOR TO PROCEEDING WITH CONSTRUCTION.
- SEAL ALL PENETRATIONS ON EXTERIOR WALLS.
- ALL PLYWOOD TO BE FIRE TREATED, U.N.O.
- DOOR FRAMES TO BE LOCATED 4" FROM CORNER OF WALL U.N.O.



A1 OVERALL GROUND FLOOR PLAN
 SCALE: 1" = 20'-0"

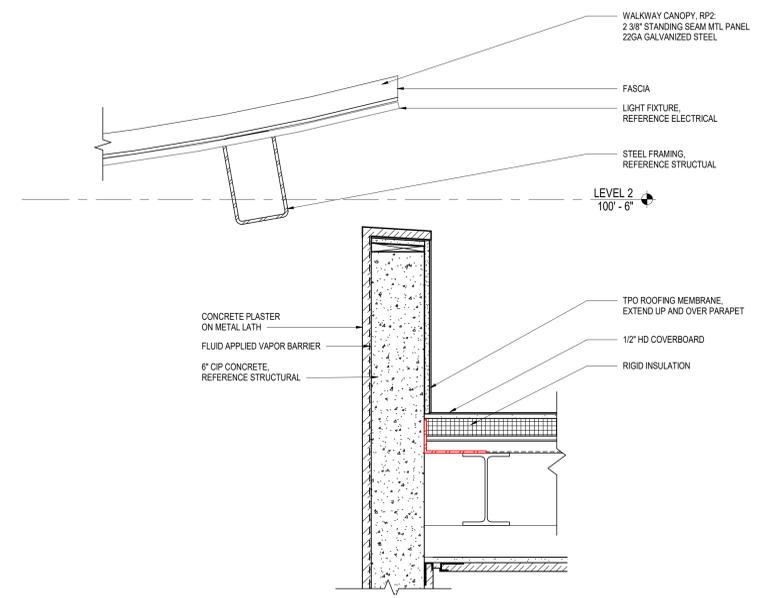


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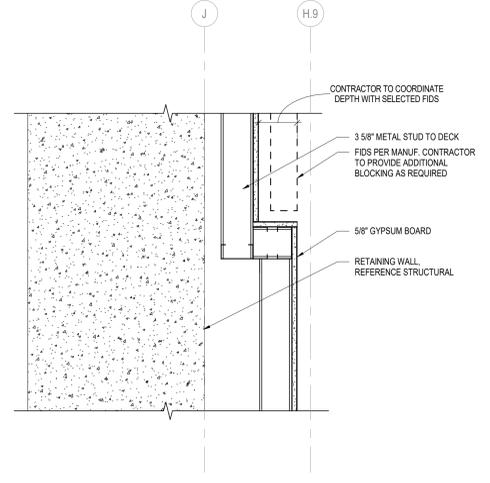
GENERAL NOTES

- DO NOT SCALE DIMENSIONS FROM DRAWINGS - THE CONTRACTOR MUST REQUEST NECESSARY DIMENSIONS NOT SHOWN ON THE DRAWINGS FROM THE ARCHITECT.
- ALL DIMENSIONS ARE TO BE FIELD VERIFIED. IF ANY DEVIATIONS OR DISCREPANCIES OCCUR, CONTACT THE ARCHITECT FOR VERIFICATION PRIOR TO PROCEEDING WITH THE WORK.
- ALL WORK SHALL COMPLY WITH THE REQUIREMENTS OF THE BUILDING CODE OF THE STATE OF NORTH CAROLINA.
- THE DIMENSIONS SHALL BE USED IN CONJUNCTION WITH THE SPECIFICATIONS.
- THE CONTRACTOR WILL FIELD VERIFY DIMENSIONS AND REPORT IN WRITING ANY CONFLICTS PRIOR TO FABRICATION.
- PROTECT THE TRANSITION STRIPS WHEN GRINDING TERRAZZO TO POLISH FINISH WITH PROTECTION TAPE.
- SEE ELECTRICAL PLANS FOR OPERATIONAL LAYOUT. CONTRACTOR SHALL VERIFY AND COORDINATE WITH OWNER'S VENDOR FOR CORRECT PLACEMENT OF HARDWARE PRIOR TO FABRICATION.
- EXISTING AND FUTURE UNDERLAY LINEWORK FOR REFERENCE PURPOSES ONLY. ANY CIVIL RELATED WORK, SEE CIVIL PACKAGE FOR DETAILS.
- THESE DRAWINGS ARE PROVIDED FOR A SPECIFIC DESIGN INTENT ONLY. THE SIGN CONTRACTOR SHALL BE RESPONSIBLE FOR ENGINEERING AND INTERNAL CONSTRUCTION OF ALL SIGNS. ANY PRODUCTS OR METHODS SPECIFIED MAY BE SUBSTITUTED WITH EQUAL SO LONG AS THE OVERALL DIMENSIONS, APPEARANCE, AND FUNCTIONALITY OF THE DESIGN IS RETAINED.
- THE SIGN CONTRACTOR SHALL ALSO BE RESPONSIBLE FOR ALL ANCHORAGES, ALL ELECTRICAL FIXTURES AND REQUIRED CONNECTIONS INTO CIRCUITS, AND WILL SUBMIT SHOP DRAWINGS, MESSAGE SCHEDULE, AND DETAILS FOR REVIEW.

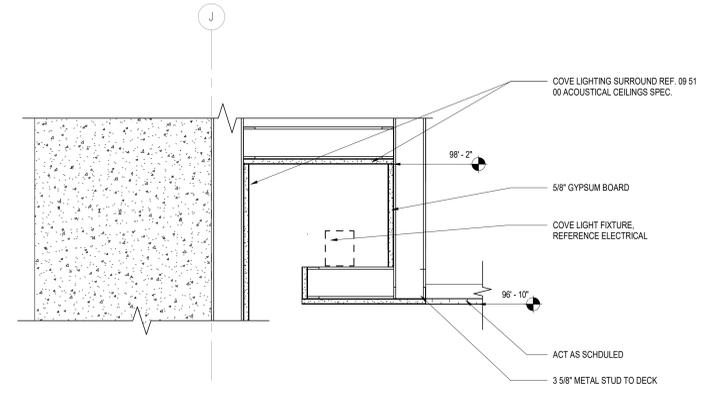
REFER TO VOLUME 2 PACKAGE



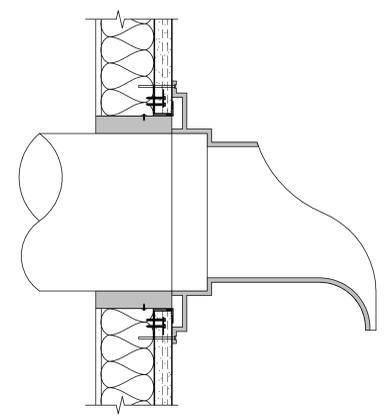
D4 ACRYLIC PANEL AT PORTAL ENTRY
SCALE: 1 1/2" = 1'-0"



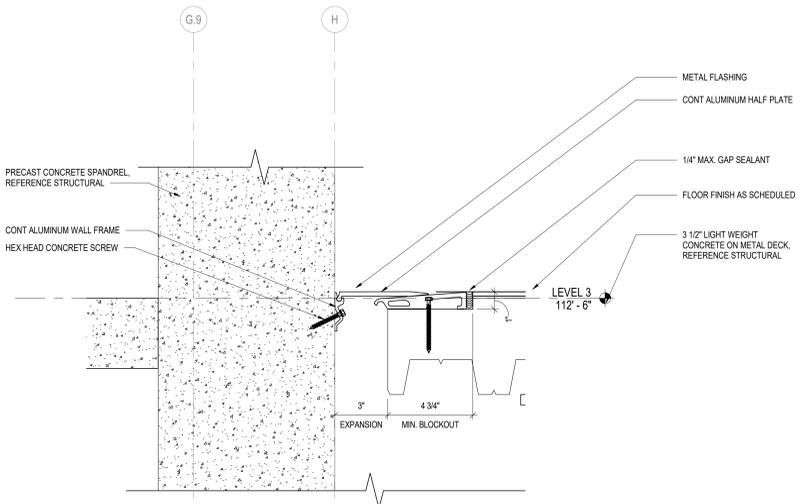
C1 FIDS RECESS DETAIL
SCALE: 1 1/2" = 1'-0"



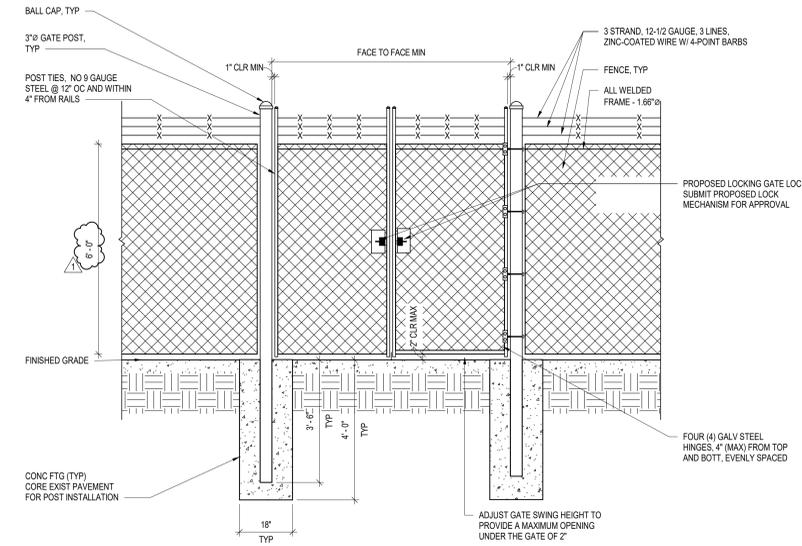
C2 LIGHT COVE SECTION DETAIL
SCALE: 1 1/2" = 1'-0"



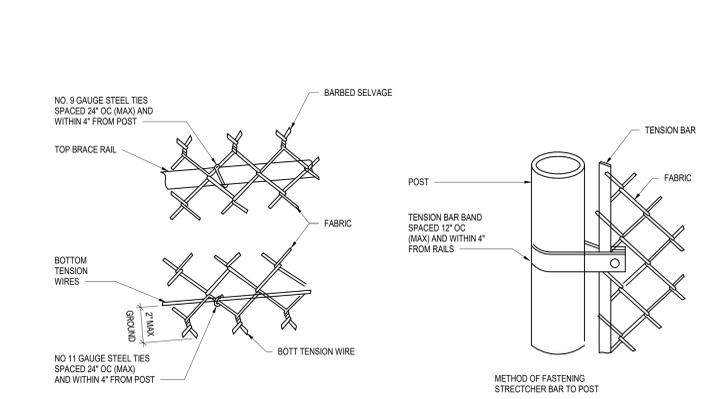
C5 SHEEP TONGUE DRAIN
SCALE: 1 1/2" = 1'-0"



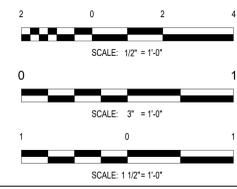
A1 EXPANSION JOINT AT PRECAST SPANDREL PANEL
SCALE: 3" = 1'-0"



A3 ACCESS GATE
SCALE: 1/2" = 1'-0"



A5 FENCE CONNECTIONS
SCALE: 3" = 1'-0"



REVISIONS

NO.	DESCRIPTION	DATE
1	ADDENDUM #1	04/10/2025
2	ADDENDUM #2	Date 2

DATE ISSUED: 03/14/2025
REVIEWED BY: SG
DRAWN BY: KS
DESIGNED BY: FG

PROJECT NUMBER:
2003-0070-006
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SHEET TITLE:
SECTION DETAILS

SHEET ID:
A503

PROJECT STATUS:
100% BID SET

ROOM SCHEDULE						
ROOM NO.	ROOM NAME	FLOOR FINISH	BASE FINISH	WALL FINISH	CEILING FINISH	REMARKS
101	STAIR 01	SC1	B2	P1	EXPOSED	
102	ELECTRICAL	SC1	B2	P1	EXPOSED	
103	MECH YARD	UC	-	-	EXPOSED	
104	MECH	UC	-	P1	EXPOSED	
105	PUMP ROOM	UC	-	P1	EXPOSED	
106	ELEVATOR	-	-	-	EXPOSED	
107	ELEVATOR	-	-	-	ACP1	
110	CIRCULATION CORE	TERR.WOM	B3	P1	ACT1, GWB1	
120	STAIR 02	-	-	-	EXPOSED	
130	STAIR 03	-	-	-	EXPOSED	
131	CIRCULATION	TZ1	B2	P1	ACP1	
201	STAIR 01	SC1	B2	P1	EXPOSED	
202	JANITOR	SC1	B2	P1	EXPOSED	
204	RESTROOM	TERR	B1	T3	ACT1	
205	STORAGE	TERR	B1	T3	ACT1	
207	STORAGE	-	-	-	-	
210	CIRCULATION CORE	TERR.WOM	B3	P1	GWB1	
221	IDF/ELEC	SC	-	P1	EXPOSED	
222	IDF/ELEC	SC	-	P1	EXPOSED	
223	IDF/ELEC	SC	-	P1	EXPOSED	
224	IDF/ELEC	SC	-	P1	EXPOSED	
225	IDF/ELEC	SC	-	P1	EXPOSED	
301	STAIR 01	SC1	B2	P1	EXPOSED	
302	STORAGE	SC1	B2	P1	EXPOSED	
303	MECH	SC1	B2	P1	EXPOSED	
306	STORAGE	SC1	B2	P1	EXPOSED	
310	CIRCULATION CORE	TERR.WOM	B3	P1	GWB1	

FF&E LEGEND					
TAG	IMAGE	DESCRIPTION	MANUFACTURER	POWER REQUIREMENT	COUNT
B-1		AND BENCH 133&647	VONDOM	YES	11
B-2		AND 218&185&234	VONDOM	YES	1

FINISH LEGEND									
Material Type	Location	MATERIAL	DESCRIPTION	MANUFACTURER	SPECIFICATION	SIZE	REMARKS		
EXTERIOR									
CEILINGS	EXTERIOR	PCP1	POLYCARBONATE PANEL - CANOPY	3FORM	KODA XT, EXTRUDED, COLORS: LOGO BLUE 02, LOGO BLUE 01, FOUNTAIN, CORNFLOWER				
FLOORING	EXTERIOR	PV1	PAVER	HANOVER	PREST PAVER, MATRIX #M1914, FINISH #13, SRI 51				
FLOORING	EXTERIOR	PV2	PAVER	HANOVER	PREST PAVER, MATRIX #M1810, FINISH: TUDOR, SRI 40				
FLOORING	EXTERIOR	PV3	PAVER	HANOVER	PREST PAVER, MATRIX #M1537, FINISH: TUDOR, SQUARE EDGE				
METAL PANELS	EXTERIOR	IMP1	INSULATED METAL PANEL - CENTER ATRIUM EXTENSION	KINGSPAN	QUADCORE 8 DESIGNWALL 2000, COLOR: REGAL BLUE	2" THICK			
METAL PANELS	EXTERIOR	IMP2	INSULATED METAL PANEL - GENERAL GARAGE	KINGSPAN	QUADCORE 8 DESIGNWALL 2000, COLOR: REGAL WHITE	2" THICK			
METAL PANELS	EXTERIOR	RP1	ROOFING PANEL AT COPULA	BERRIDGE	COLOR: SHAFTA WHITE, MODEL: DOUBLE LOCK ZEE LOCK	TBD			
METAL PANELS	EXTERIOR	RP2	ROOFING PANEL AT PLAZA CANOPIES	METCO	MODEL: S312, CURVED PANELS AT 24 RADIUS, MATERIAL: 22GAUGE GALVANIZED STEEL	12" X 84" X 2 3/8"	CONTACT: MARK GAYLOR, 301-673-1149, MGAYLOR@METCO.COM		
PAINT	EXTERIOR	EP1	EXTERIOR PAINT - STEEL BOLLARD	SHERWIN WILLIAMS	COLOR: SAFETY BLACK, REFER TO CIVIL DRAWINGS FOR MORE INFORMATION		CONTACT: JOY BABUR, 407-684-7994, JOY.LABUR@SHERWIN.COM		
PAINT	EXTERIOR	EP2	EXTERIOR PAINT - CURB	SHERWIN WILLIAMS					
PAINT	EXTERIOR	EP3	EXTERIOR PAINT - DOOR	SHERWIN WILLIAMS					
STONE PANELS	EXTERIOR	SP1	TABBY STONE PANEL - TERMINAL FACADE	TBD	COLOR TYPE: TABBY OYSTER SHELL, COLOR: LIGHT CREAM	TBD			
WALL	EXTERIOR	OW1	CURTAIN WALL	KAWNEER	1600 WALL SYSTEM CURTAIN WALL, FINISH: ANODIZED ALUMINUM	6" X 2.5"			
WALL	EXTERIOR	OW2	CURTAIN WALL	KAWNEER	1600 WALL SYSTEM CURTAIN WALL, FINISH: ANODIZED ALUMINUM	7 1/2"			
WALL	EXTERIOR	GL1	STOREFRONT GLAZING SYSTEM						
INTERIOR									
CASEWORK	INTERIOR	PL1	PLASTIC LAMINATE - RESTROOM APRONS	WILSONART	COLOR: SATIN STAINLESS 4830-18, FINISH: LINEARITY, INSTALL PATTERN: HORIZONTALLY IN ALL INSTANCES, SHOW INSTALLATION DIRECTION IN SHOP DRAWINGS	4" X 8'	CONTACT: CATHY GRIMM, 813-682-9624, CATHY.GRIMM@WILSONART.COM		
CASEWORK	INTERIOR	SS1	QUARTZ (RENTAL IN BASE BID, TICKETING - ALTERNATE)	CAMBRIA	COLLECTION: LUXURY SERIES, STYLE: PORTRUSH, THICKNESS: 3CM, EDGE PROFILE: EASED EDGE		CONTACT: TANYA BARKER, 407-480-2899, TANYA.BARKER@CAMBRIAUSA.COM		
CASEWORK	INTERIOR	SS2	QUARTZ (RESTROOMS)	COSENTINO	STYLE: ETERNAL CALACATTA GOLD, FINISH: POLISHED, THICKNESS: 3CM - PRICE GROUP 2	128.74" x 62.67" x 3 CM THICK	CONTACT: NICOLE WATSON, 859-638-2928, NICOLE@COSENTINO.COM		
CASEWORK	INTERIOR	SS3	QUARTZ - WINDOW SILLS	HANSTONE	COLOR: AURORA SNOW - CL101, EDGE PROFILE: EASED EDGE	1/2" THICK			
CEILINGS	INTERIOR	ACT1	ACOUSTICAL CEILING TILE - GENERAL	ARMSTRONG	ULTIMA LAY IN, PRODUCT #1910, SIZE: 2' X 2' TILE, WHITE GRID, PRELUDE XL 15/16" EXPOSED TEE, 6" AXIOM TRIM ANXOUR	2' X 2' X 7/8"	CONTACT: BILL MENDEK, 904-652-6931, WMENDEK@ARMSTRONGCEILING.COM		
CEILINGS	INTERIOR	ACT4	ACOUSTICAL CEILING TILE - (ESCALATORS)	ARKTURA	SURFACE TEXTURE: MIRROR - SMOOTH, COMPOSITION: 20-GAUGE 304 STAINLESS STEEL, COLOR: STAINLESS, SIZE: APPROXIMATELY 2' X 6', TEXTURE: RIPPLE, CONSTRUCTION: DOUBLE RETURN FLANGES BE REQUIRED ON ALL 4 SIDES, SUSPENSION SYSTEM: TORXON SPRING CEILING PANELS, PRELUDE XL 12 WITH 2 CROSS TEE SLOTTED	2' X 6'	CONTACT: STEVEN RANTA, 310-291-8096, STEVEN.RANTA@ARKTURA.COM		
CEILINGS	INTERIOR	GWBPS	GYPSUM WALL BOARD - PAINTED, RESTROOMS, LOCKER ROOM	SHERWIN WILLIAMS	COLOR: PURE WHITE SW 7005, EG-SHEL		CONTACT: FRED LAURO, 727-735-1643, FREDERICK.M.LAURO@SHERWIN.COM		
FLOORING	INTERIOR	SC1	SEALED CONCRETE (MECHSTORAGE)	PACHYDERMKEY RESIN	SEALER: KEY 804		CONTACT: BRIAN WOLFE, 813-464-1510, BWOLFE@PMCTAMPA.COM		
FLOORING	INTERIOR	TER-1	TERRAZZO - DARK BLUE	TERRAZZO RESIN SYSTEMS	TM24-3193, EPOXY COLOR: BLUE ENTRY #5979, GRIT: 200, FILLER: CLEAR GLASS FINES, SEALER: WB ACRYLIC, CHIPS: 80% - SIZE: 1 MIDNIGHT BLUE GLASS, 20% - SIZE: 2 - SO CAL ONE SIDED MIRROR	3/8" THICK	CONTACT: BRAD HEDGES, 770-325-0725, BRAD@SCIGA.COM		
FLOORING	INTERIOR	TER-2	TERRAZZO - LIGHT BLUE	TERRAZZO RESIN SYSTEMS	TM24-3198, EPOXY COLOR: SW BLUE CHIP #6683, GRIT: 200, FILLER: ATF-20, SEALER: WB ACRYLIC, CHIPS: 30% - SIZE: 2 CLASSIC MOP, 30% - SIZE: 2 - CRYSTAL GLASS, 20% - SIZE: 2 - SO CAL ONE SIDED MIRROR, 20% - SIZE: 2 - GA WHITE	3/8" THICK	CONTACT: BRAD HEDGES, 770-325-0725, BRAD@SCIGA.COM		
FLOORING	INTERIOR	TER-3	TERRAZZO - GENERAL, RESTROOMS	TERRAZZO RESIN SYSTEMS	TM23-3185, EPOXY COLOR: PURE WHITE #4427, GRIT: 200, FILLER: ATF-20, SEALER: WB ACRYLIC, CHIPS: 30% - SIZE: 2 CLASSIC MOP, 30% - SIZE: 2 - CRYSTAL GLASS, 20% - SIZE: 2 - PACIFIC ONE SIDED MIRROR, 20% - SIZE: 2 - GA WHITE	3/8" THICK	CONTACT: BRAD HEDGES, 770-325-0725, BRAD@SCIGA.COM		
FLOORING	INTERIOR	TER-4	TERRAZZO - SAND	TERRAZZO RESIN SYSTEMS	TM24-3198, EPOXY COLOR: URBAN PUTTY #4583, GRIT: 200, FILLER: ATF-20, SEALER: WB ACRYLIC, CHIPS: 30% - SIZE: 2 CLASSIC MOP, 30% - SIZE: 2 - CRYSTAL GLASS, 20% - SIZE: 2 - PACIFIC ONE SIDED MIRROR, 20% - SIZE: 2 - GA WHITE, WITH STAFFISH ALUMINUM INLAY AS SPECIFIED, WITH LED MOTION ACTIVATED FOOTPRINTS AS SPECIFIED, REFER TO FINISH PLANS	3/8" THICK	CONTACT: BRAD HEDGES, 770-325-0725, BRAD@SCIGA.COM		
FLOORING	INTERIOR	TER-5	TERRAZZO - DIVIDER STRIPS	TERRAZZO RESIN SYSTEMS	L BRACKET, ALUMINUM	1/8" X 3/8" H	CONTACT: BRAD HEDGES, 770-325-0725, BRAD@SCIGA.COM		
FLOORING	INTERIOR	TER	TERRAZZO - MATCH EXISTING - TICKETING LEVEL	TERRAZZO RESIN SYSTEMS	TM24-3194, EPOXY COLOR: #2001 WHITE, GRIT: 200, ATF-20, SEALER: WB ACRYLIC, CHIPS: 70% - SIZE: 1 - PURE WHITE, 30% - SIZE: 2 - PURE WHITE	3/8" THICK	CONTACT: BRAD HEDGES, 770-325-0725, BRAD@SCIGA.COM		
FLOORING	INTERIOR	VC2	VINYL COMPOSITION TILE - STATIC DISSIPATIVE (ELECTRICAL, COMM. IT ROOM)	ARMSTRONG FLOORING	COLLECTION: EXCELON S/OT, COLOR: FOSSIL GRAY, ITEM NUMBER: 51666, USE WITH S-302 SOT ADHESIVE, AND S-302 STATIC DISSIPATIVE POLISH, COORDINATE WITH ELECTRICAL TO MEET MANUFACTURER GROUNDING REQUIREMENTS	12" X 12" X 1/8"	CONTACT: CATHLEEN CLARKE, 804-284-3424, CATHLEEN.CLARKE@AFFPRODUCTS.COM		
FLOORING	INTERIOR	WOM1	WALK OFF MAT	MILLIKEN	OBEX BAR CUTX, COLLECTION: GRAIN, COLOR: TAUPE GRX174-133, DYE: PRINTWORKS PRECISION DYE, INSTALLATION METHOD: PLANK HORIZONTAL ASHLAR	25 CM X 1M X 5/8" THICK	CONTACT: HANK ISRAEL, 954-280-8169, HANK.ISRAEL@MILLIKEN.COM		
GROUT	INTERIOR	G-1	GROUT 1/8" JOINTS	MAPEI	KERAPOXY CQ, COLOR: ALABASTER 01, USE WITH ALL TILE UNLESS NOTED OTHERWISE	1/8"	CONTACT: JEFF BLUMBERG, 954-304-0879, JBLUMBERG@MAPEI.COM		
METAL PANELS	INTERIOR	MP1	METAL COLUMN WRAP	MOZ	LASER CUT, PATTERN: FALLS, TOP OF LASER CUT PATTERN 8" AFF, COLOR: SILVER METALLIC, RGBW LED BACKLIT, RECESSED BASE INSET 1" AND 9" H BRUSHED STAINLESS, COORDINATE WITH ELECTRICAL, PROVIDE SHOP DRAWING PRIOR TO ORDERING	4" X 10" X 1/8" THICK	CONTACT: JAMIE SANDFORD, 720-654-3380, JAMIE@MOZDESIGNS.COM		
METAL PANELS	INTERIOR	MP2	METAL LAMINATE ACCENT BAND (TICKETING, RENTAL CAR, GATE, SUBMITTER VERTICALS)	MOZ	STYLE: GRADIENT, COLOR: AURORA COBALT GRADIENT TO TURQUOISE, .040 ALUMINUM FINISH: COARSE, INCLUDE 1" DIAMETER STANDOFF, CYLINDER CAP 1/4", SUBMIT SAMPLE FOR APPROVAL	4" X 10'	CONTACT: JAMIE SANDFORD, 654-3380, JAMIE@MOZDESIGNS.COM		
SPECIALTY	INTERIOR	P8	PAINT - STRUCTURAL COLUMNS	SHERWIN WILLIAMS	FRETEX FBX010 THREE-COMPONENT FLUORESCENT COATING, TOPCOAT: BONOPLEX WATERBASED ACRYLIC, COLOR: WHITE ALUMINUM, LOCATION: EXPOSED STEEL COLUMNS, TOP COAT WHEN EXPOSED IN PUBLIC SPACES		CONTACT: FRED LAURO, 727-735-1643, FREDERICK.M.LAURO@SHERWIN.COM		
STAIRS	INTERIOR	STR1	STAIR TREAD (BOWSTRING & FIS)						
STAIRS	INTERIOR	STR2	STAIR NOSING						
TOILET PARTITIONS	INTERIOR	TP1	TOILET PARTITIONS	WILSONART	REFER TO TOILET ACCESSORY SCHEDULES				
TRANSITIONS	INTERIOR	TR1	TRANSITION - CARPET TO SEALED CONCRETE	SCHLUTER	RENO T, CONT. ALUMINUM TRANSITION PROFILE		CONTACT: MATT LONG, 407-795-0794, MLONG@SCHLUTER.COM		
TRANSITIONS	INTERIOR	TR2	TRANSITION - TERRAZZO TO SEALED CONCRETE	SCHLUTER	RENO RAMP K, COLOR: SATIN ANODIZED ALUMINUM, COORDINATE WITH TERRAZZO THICKNESS		CONTACT: MATT LONG, 407-795-0794, MLONG@SCHLUTER.COM		
TRANSITIONS	INTERIOR	TR3	TRANSITION - TERRAZZO TO CARPET	SCHLUTER	SCHLUTER DECO OR APPROVAL EQUAL, TYP.		CONTACT: MATT LONG, 407-795-0794, MLONG@SCHLUTER.COM		
TRANSITIONS	INTERIOR	TR4	TRANSITION - TERRAZZO TO WALK OFF MAT	SCHLUTER	RENO T, CONT. ALUMINUM TRANSITION PROFILE		CONTACT: MATT LONG, 407-795-0794, MLONG@SCHLUTER.COM		
TRANSITIONS	INTERIOR	TR5	TRANSITION - WALL TILE EDGE	SCHLUTER	STYLE: ROUNDED OUTSIDE CORNER, ITEM: RONDEC R0100AE, 100 (3/8"), FINISH: BRUSHED STAINLESS, AT ALL OUTSIDE CORNERS		CONTACT: MATT LONG, 407-795-0794, MLONG@SCHLUTER.COM		
TRANSITIONS	INTERIOR	TR6	TRANSITION - TERRAZZO TO TERRAZZO	SCHLUTER	RENO T, CONT. ALUMINUM TRANSITION PROFILE		CONTACT: MATT LONG, 407-795-0794, MLONG@SCHLUTER.COM		
TRANSITIONS	INTERIOR	TR7	TRANSITION - TERRAZZO TO STAINED CONCRETE	SCHLUTER	RENO RAMP K, COLOR: SATIN ANODIZED ALUMINUM, COORDINATE WITH TERRAZZO THICKNESS, PROTECT TRANSITION DURING POLISHING OF TERRAZZO		CONTACT: MATT LONG, 407-795-0794, MLONG@SCHLUTER.COM		
TRANSITIONS	INTERIOR	TR9	TRANSITION - EXPANSION JOINT	INPRO	304 SERIES-RECESSED MOUNT, JOINT OPENING: 3", FLOOR THICKNESS: 3/8", INSTALL CONDITION: FLOOR TO WALL		CONTACT: MATT LONG, 407-795-0794, MLONG@SCHLUTER.COM		
WALL	INTERIOR	AP1	ACRYLIC PANEL	SENSITILE	LUMINA, PATTERN: RANDOM, LIGHT POINT DENSITY: STANDARD (MEDIUM), GRAIN WIDTH: 3/8", CORE THICKNESS: 3/4", CLADDING THICKNESS: 1/8", CLADDING FINISH: FROSTED-CLEAR-CLEAR MIRROR - WHITE PROTECT, INTERLAYER: BLUE GRADIENT, LIGHT EMISSION: FACE ONLY, LED COLORS: RG	4" W, 1-1/16" THICK	CONTACT: MOLLY GREEN, 313-872-6314 EXT. 108, ESTIMATING@SENSITILE.COM, SUBMIT SAMPLE FOR APPROVAL		
WALL	INTERIOR	AP2	ACRYLIC PANEL	SENSITILE	LUMINA, PATTERN: RANDOM, LIGHT POINT DENSITY: STANDARD (MEDIUM), GRAIN WIDTH: 3/8", CORE THICKNESS: 3/4", CLADDING THICKNESS: 1/8", CLADDING FINISH: FROSTED-CLEAR-CLEAR MIRROR - WHITE PROTECT, INTERLAYER: BLUE GRADIENT, LIGHT EMISSION: FACE ONLY, LED COLORS: RG	VARYING STANDARD SIZE, REFER TO RCP	CONTACT: MOLLY GREEN, 313-872-6314 EXT. 108, ESTIMATING@SENSITILE.COM, SUBMIT SAMPLE FOR APPROVAL		
WALL	INTERIOR	AP3	ACRYLIC PANEL	SENSITILE	LUMINA, PATTERN: RANDOM, LIGHT POINT DENSITY: STANDARD (MEDIUM), GRAIN WIDTH: 3/8", CORE THICKNESS: 3/4", CLADDING THICKNESS: 1/8", CLADDING FINISH: FROSTED-CLEAR-CLEAR MIRROR - WHITE PROTECT, INTERLAYER: BLUE GRADIENT, LIGHT EMISSION: FACE ONLY, LED COLORS: RG	VARYING STANDARD SIZE, REFER TO RCP	CONTACT: MOLLY GREEN, 313-872-6314 EXT. 108, ESTIMATING@SENSITILE.COM, SUBMIT SAMPLE FOR APPROVAL		
WALL	INTERIOR	AP4	ACRYLIC PANEL	SENSITILE	LUMINA, PATTERN: RANDOM, LIGHT POINT DENSITY: STANDARD (MEDIUM), GRAIN WIDTH: 3/8", CORE THICKNESS: 3/4", CLADDING THICKNESS: 1/8", CLADDING FINISH: FROSTED-CLEAR-CLEAR MIRROR - WHITE PROTECT, INTERLAYER: BLUE GRADIENT, LIGHT EMISSION: FACE ONLY, LED COLORS: RG	1" W, 1-1/16" THICK	CONTACT: MOLLY GREEN, 313-872-6314 EXT. 108, ESTIMATING@SENSITILE.COM, SUBMIT SAMPLE FOR APPROVAL		
WALL	INTERIOR	CC1	COLUMN COVERS - (SSCP, NON SPECIALTY)	ARMSTRONG	PLASTERFORM COLUMN COVERS, 2-4" DIA, VERTICAL BUTT JOINT, CONFIRM COLUMN DIMENSION DUE TO VARIOUS SIZES				
WALL	INTERIOR	CG1	CORNER GUARD - GENERAL OUTSIDE WALLS	ACROVYN	WIDTH: 1" 1/2 LEGS X HEIGHT: 8-0", GAUGE: 16, FLAT-HEAD COUNTERSUNK SCREWS THROUGH FACTORY DRILLED MOUNTING HOLES AND ADHESIVE, STAINLESS STEEL 304	GAUGE: 14, LEG LENGTH: 1/2"	CONTACT: CLYDE COPELAND, 813-831-3344, COPELAND@AS-CORP.COM		
WALL	INTERIOR	P1	PAINT - GENERAL	SHERWIN WILLIAMS	PROMAR 200 HP LG, 841-1900 SERIES, COLOR: SW 7009 ALABASTER, FINISH: EG-SHEL		CONTACT: FRED LAURO, 727-735-1643, FREDERICK.M.LAURO@SHERWIN.COM		
WALL	INTERIOR	P2	PAINT - DOORS/FRAMES	SHERWIN WILLIAMS	PRO IND WB ALKYL URETHANE LS, 863-2250 SERIES, EG-SHEL, COLOR: SW 6002 ESSENTIAL GRAY, FINISH: SEMI-GLOSS		CONTACT: FRED LAURO, 727-735-1643, FREDERICK.M.LAURO@SHERWIN.COM		
WALL	INTERIOR	P3	PAINT - ACCENT	SHERWIN WILLIAMS	PROMAR 200HP LG, 841-1900 SERIES, COLOR: SW 6958 DYNAMIC BLUE, EG-SHEL		CONTACT: FRED LAURO, 727-735-1643, FREDERICK.M.LAURO@SHERWIN.COM		
WALL	INTERIOR	P5	PAINT - GWB CEILING/SOFFITS (STERILE CORRIDOR/PBB)	SHERWIN WILLIAMS	PRO IND MULTI-SURFACE ACRYLIC 866-1560 SERIES, COLOR: SW 7007 CEILING BRIGHT WHITE, FINISH: EG-SHEL		CONTACT: FRED LAURO, 727-735-1643, FREDERICK.M.LAURO@SHERWIN.COM		
WALL	INTERIOR	T1	STONE TILE (CONNECTOR)	STONESOURCE	SEASTONE STARFISH FOSSIL IMPRESSION, SQUARE EDGE MEDALLION TILE IN BEIGE, MATERIAL: COMPRESSED STONE, DESIGN: FOSSILIZED, SHADE VARIATION V2, POLISH FINISH: HONED, INSTALL PATTERN: STRAIGHT STACKED, GROUT: JONT, 1/16" CAN BE DRY CUT	6" X 6" X 1" THICK	CONTACT: KIMBERLY BEYERLEIN, 813-714-4603, KBEYERLEIN@STONESOURCE.COM		
WALL	INTERIOR	T3	TILE - PORCELAIN - RESTROOMS	DALTILE	STYLE: IRONCRAFT, COLOR: PHOSPHOR WHITE IC11	12" X 24"	CONTACT: LORI SCHWARTZ, 407-716-6447, LORI.SCHWARTZ@DAL TILE.COM		
WALL	INTERIOR	WP2	WALL PANEL - ELEVATOR PANELS - INTERIOR CAB	FORMS + SURFACES	LEVEL=105A GARAGE, PANEL FINISHES: CUSTOM GRADIENTS, STAINLESS STEEL, WITH SANDSTONE FINISH NO PATTERN CERAMILOCK - BASE IN FUSED WHITE GOLD SANDSTONE FINISH NO PATTERN CERAMILOCK - ALUMINUM CLEAR ANODIZED REVEALS, ROUND STIPPLED STAINLESS STEEL HANDRAILS, STAINLESS STEEL SATIN CRASH RAIL, FUSED WHITE GOLD SANDSTONE LED PERIMETER CEILING, SEE DIAGRAM FOR COORDINATION, COORDINATE WITH MANUFACTURER FOR DETAIL DRAWINGS AND PANEL LOCATIONS, CONTROLLER AND DRIVERS FOR CEILING LIGHT AND BACK PANEL LIGHT INCLUDED IN PANEL AS ONE SYSTEM, COORDINATE WITH ELECTRICAL FOR CIRCUITING REQUIREMENTS, FOR ELEVATOR CAB INTERIORS REFER TO ELEVATOR FINISH DETAILS SHEET.		CONTACT: COREY BREWER, 407-340-2923, COREY@EVEVERFORM.COM		
WALL BASE	INTERIOR	B1	9" TERRAZZO BASE	TERRAZZO RESIN SYSTEMS	STRAIGHT PROFILE, MATCH TZ-1 FORMULA	6" H	CONTACT: BRAD HEDGES, 770-325-0725, BRAD@SCIGA.COM		
WALL BASE	INTERIOR	B2	4" (FOR CARPET AND RESILIENT FLOORING)	FLEXCO	4" HEIGHT, ROLLED GOOD, USE PREFORMED CORNERS, COLOR: BLACK DAHLIA, PRODUCT: WALLFLOWERS	4"	CONTACT: NADINE PHILLIPS, 607-745-3780, NADINE@CFPLOORING.COM		
WALL BASE	INTERIOR	B3	WOOD BASE	INPRO	MATCH EXISTING - REFER TO VOLUME I A811				

FINISH PLAN LEGEND & SHEET NOTES	
GENERAL SHEET NOTES	
1.	REFER TO TOILET ACCESSORIES SCHEDULE FOR TOILET PARTITION FINISH
2.	GC SHALL PROVIDE MOCK UPS FOR COLUMNS, RESTROOM VANITIES WITH FAUCETS AND SOAP DISPENSERS, TEST FOR WATER PRESSURE OUTPUT AND CONFIRM PRESSURE MEETS OWNERS APPROVAL.
3.	LOCATIONS LISTED ON FINISH LEGEND ARE APPROXIMATE LOCATIONS AND ARE NOT LIMITED TO THOSE AREAS LISTED. REFER TO ALL DRAWINGS FOR ADDITIONAL INFORMATION.

RS&H
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 F-0493 * C-28



PROJECT TITLE:
 ILM AIRPORT BOULEVARD AND
 PARKING IMPROVEMENTS -
 PHASE II

PROJECT ADDRESS:
 1740 AIRPORT BLVD.
 WILMINGTON, NC 28405

REVISIONS		
NO.	DESCRIPTION	DATE
1	ADDENDUM #1	04/10/2025
2	ADDENDUM #2	Date 2

DATE ISSUED: 03/14/2025
 REVIEWED BY: SG
 DRAWN BY: KS
 DESIGNED BY: FG
 PROJECT NUMBER:
 2003-0070-006
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SEAL:
 FOR REVIEW ONLY
 NOT FOR CONSTRUCTION

SWITCHBOARD LOCATION				S4N-101 ELECTRICAL 132		1200 A BUS W/ 1200 A 65 KA SCCR		
CKT NO	BREAKER FRAME	BREAKER TRIP / POLE	LOAD CLASS & LOCATION	ID	NOTES	A	B	C
1	200 A	200 A	3 LAN-101			14862 VA	13226 VA	11528 VA
2	400 A	400 A	3 LP4N-101			59935 VA	58475 VA	51841 VA
3	60 A	60 A	3 T-3			2178 VA	2820 VA	3098 VA
4	60 A	60 A	3 T-4			5311 VA	7886 VA	4458 VA
5	200 A	200 A	3 T-5			30743 VA	30743 VA	30743 VA
6	200 A	200 A	3 T-6			30743 VA	30743 VA	30743 VA
7	200 A	200 A	3 T-7			30743 VA	30743 VA	30743 VA
8	200 A	200 A	3 T-8(FUTURE)			30743 VA	30743 VA	30743 VA
9	30 A	30 A	3 T-11			3418 VA	2918 VA	1220 VA
10	30 A	30 A	3 T-10			2218 VA	2918 VA	2420 VA
11	30 A	30 A	3 T-9			2218 VA	2918 VA	2420 VA
12								
13								
14								
15								
16								
17								
18	30 A	30 A	3 SPD					
CONNECTED LOAD:						215112 VA	214132 VA	199957 VA
Panel Totals						Total Conn. Load: 627201 VA		
Panel Totals						Total Est. Demand: 630128 VA		
Panel Totals						Total Conn. Current: 754.4 A		
Panel Totals						Total Est. Demand Current: 757.9 A		

Load Classification	Connected Load	Demand Factor	Estimated Demand	Panel Totals
MOTR	81743 VA	105.6%	86302 VA	
HVAC	54943 VA	100.0%	54943 VA	
EQUIPMENT	421827 VA	100.0%	421827 VA	
HEAT	6000 VA	100.0%	6000 VA	
LITE	49428 VA	100.0%	49428 VA	
RCPT	13260 VA	87.7%	11630 VA	

GENERAL NOTES:

NOTES:

SWITCHBOARD LOCATION				S4N-101 ELECTRICAL 132		480Y/277 VAC		
CKT NO	BREAKER FRAME	BREAKER TRIP / POLE	LOAD CLASS & LOCATION	ID	NOTES	A	B	C
1	20 A	20 A	1 1ST FLOOR LTG			4.28 kVA	3.85 kVA	
2	20 A	20 A	1 1ST FLOOR LTG				3.85 kVA	
3	20 A	20 A	1 1ST FLOOR LTG					3.85 kVA
4	20 A	20 A	1 1ST FLOOR LTG					
5	20 A	20 A	1 2ND FLOOR LTG			1.91 kVA	1.64 kVA	
6	20 A	20 A	1 2ND FLOOR LTG				2.06 kVA	3.00 kVA
7	20 A	20 A	1 2ND FLOOR LTG					1.91 kVA
8	20 A	20 A	1 2ND FLOOR LTG					1.80 kVA
9	20 A	20 A	1 2ND FLOOR LTG					
10	20 A	20 A	1 2ND FLOOR LTG					
11	20 A	20 A	1 2ND FLOOR LTG					
12	20 A	20 A	1 2ND FLOOR LTG					
13	20 A	20 A	1 2ND FLOOR LTG			2.10 kVA	1.09 kVA	
14	20 A	20 A	1 RENTAL CAR RAMP LIGHTING				0.46 kVA	
15	20 A	20 A	1 SOUTH CENTER STAIR LTG					1.70 kVA
16								
17								
18								
19								
20								
21								
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36								
37								
38								
39								
40								
41								
Total Load:						14862 VA	13226 VA	11528 VA
Total Load:						54.6 A	48.7 A	41.6 A

Load Classification	Connected Load	Demand Factor	Estimated Demand	Panel Totals
LITE	39615 VA	100.0%	39615 VA	

Legend:

NOTES:

SWITCHBOARD LOCATION				S4N-101 ELECTRICAL 132		480Y/277 VAC		
CKT NO	BREAKER FRAME	BREAKER TRIP / POLE	LOAD CLASS & LOCATION	ID	NOTES	A	B	C
1	20 A	20 A	1 1ST FLOOR LTG			4.28 kVA	3.85 kVA	
2	20 A	20 A	1 1ST FLOOR LTG				3.85 kVA	
3	20 A	20 A	1 1ST FLOOR LTG					3.85 kVA
4	20 A	20 A	1 1ST FLOOR LTG					
5	20 A	20 A	1 2ND FLOOR LTG			1.91 kVA	1.64 kVA	
6	20 A	20 A	1 2ND FLOOR LTG				2.06 kVA	3.00 kVA
7	20 A	20 A	1 2ND FLOOR LTG					1.91 kVA
8	20 A	20 A	1 2ND FLOOR LTG					1.80 kVA
9	20 A	20 A	1 2ND FLOOR LTG					
10	20 A	20 A	1 2ND FLOOR LTG					
11	20 A	20 A	1 2ND FLOOR LTG					
12	20 A	20 A	1 2ND FLOOR LTG					
13	20 A	20 A	1 2ND FLOOR LTG			2.10 kVA	1.09 kVA	
14	20 A	20 A	1 RENTAL CAR RAMP LIGHTING				0.46 kVA	
15	20 A	20 A	1 SOUTH CENTER STAIR LTG					1.70 kVA
16								
17								
18								
19								
20								
21								
22								
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24								
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38								
39								
40								
41								
Total Load:						14862 VA	13226 VA	11528 VA
Total Load:						54.6 A	48.7 A	41.6 A

Load Classification	Connected Load	Demand Factor	Estimated Demand	Panel Totals
LITE	39615 VA	100.0%	39615 VA	

Legend:

NOTES:

SWITCHBOARD LOCATION				S4N-101 ELECTRICAL 132		480Y/277 VAC		
CKT NO	BREAKER FRAME	BREAKER TRIP / POLE	LOAD CLASS & LOCATION	ID	NOTES	A	B	C
1	20 A	20 A	1 1ST FLOOR LTG			4.28 kVA	3.85 kVA	
2	20 A	20 A	1 1ST FLOOR LTG				3.85 kVA	
3	20 A	20 A	1 1ST FLOOR LTG					3.85 kVA
4	20 A	20 A	1 1ST FLOOR LTG					
5	20 A	20 A	1 2ND FLOOR LTG			1.91 kVA	1.64 kVA	
6	20 A	20 A	1 2ND FLOOR LTG				2.06 kVA	3.00 kVA
7	20 A	20 A	1 2ND FLOOR LTG					1.91 kVA
8	20 A	20 A	1 2ND FLOOR LTG					1.80 kVA
9	20 A	20 A	1 2ND FLOOR LTG					
10	20 A	20 A	1 2ND FLOOR LTG					
11	20 A	20 A	1 2ND FLOOR LTG					
12	20 A	20 A	1 2ND FLOOR LTG					
13	20 A	20 A	1 2ND FLOOR LTG			2.10 kVA	1.09 kVA	
14	20 A	20 A	1 RENTAL CAR RAMP LIGHTING				0.46 kVA	
15	20 A	20 A	1 SOUTH CENTER STAIR LTG					1.70 kVA
16								
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41								
Total Load:						14862 VA	13226 VA	11528 VA
Total Load:						54.6 A	48.7 A	41.6 A

Load Classification	Connected Load	Demand Factor	Estimated Demand	Panel Totals
LITE	39615 VA	100.0%	39615 VA	

Legend:

NOTES:

SWITCHBOARD LOCATION				S4N-101 ELECTRICAL 132		480Y/277 VAC		
CKT NO	BREAKER FRAME	BREAKER TRIP / POLE	LOAD CLASS & LOCATION	ID	NOTES	A	B	C
1	20 A	20 A	1 1ST FLOOR LTG			4.28 kVA	3.85 kVA	
2	20 A	20 A	1 1ST FLOOR LTG				3.85 kVA	
3	20 A	20 A	1 1ST FLOOR LTG					3.85 kVA
4	20 A	20 A	1 1ST FLOOR LTG					
5	20 A	20 A	1 2ND FLOOR LTG			1.91 kVA	1.64 kVA	
6	20 A	20 A	1 2ND FLOOR LTG				2.06 kVA	3.00 kVA
7	20 A	20 A	1 2ND FLOOR LTG					1.91 kVA
8	20 A	20 A	1 2ND FLOOR LTG					1.80 kVA
9	20 A	20 A	1 2ND FLOOR LTG					
10	20 A	20 A	1 2ND FLOOR LTG					
11	20 A	20 A	1 2ND FLOOR LTG					
12	20 A	20 A	1 2ND FLOOR LTG					
13	20 A	20 A	1 2ND FLOOR LTG			2.10 kVA	1.09 kVA	
14	20 A	20 A	1 RENTAL CAR RAMP LIGHTING				0.46 kVA	
15	20 A	20 A	1 SOUTH CENTER STAIR LTG					1.70 kVA
16								
17								
18								
19								
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31								
32								
33								
34								
35								
36								
37								
38								
39								
40								
41								
Total Load:						14862 VA</		

NOTES:

1. ALL EQUIPMENT, DEVICES AND CABLING SHALL BE NEW AND PROVIDED BY THE CONTRACTOR UNLESS OTHERWISE NOTED.
2. REFER TO COMMUNICATIONS INTERCONNECT AND RISER DIAGRAMS ON SHEETS T702 AND T703 FOR CABLE AND CONDUIT REQUIREMENTS.
3. CONTRACTOR SHALL COORDINATE WORK WITH THE ELECTRICAL CONTRACTOR AND OTHER TRADES AS REQUIRED.
4. NETWORK SWITCHES SHALL BE PROVIDED BY THE OWNER AND INSTALLED BY THE CONTRACTOR. COORDINATE WITH THE OWNER'S IT REPRESENTATIVE.
5. CONDUIT (C) AND CABLE LADDER (C.L.) ROUTING SHOWN IS SCHEMATIC IN NATURE. ACTUAL ROUTING SHALL BE DETERMINED ACCORDING TO FIELD CONDITIONS AND AS COORDINATED WITH OTHER TRADES.
6. APPROVED UL DEVICES SHALL BE USED TO SEAL PENETRATIONS THROUGH FIRE RATED WALLS.

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Hartranft
 Lighting
 Design

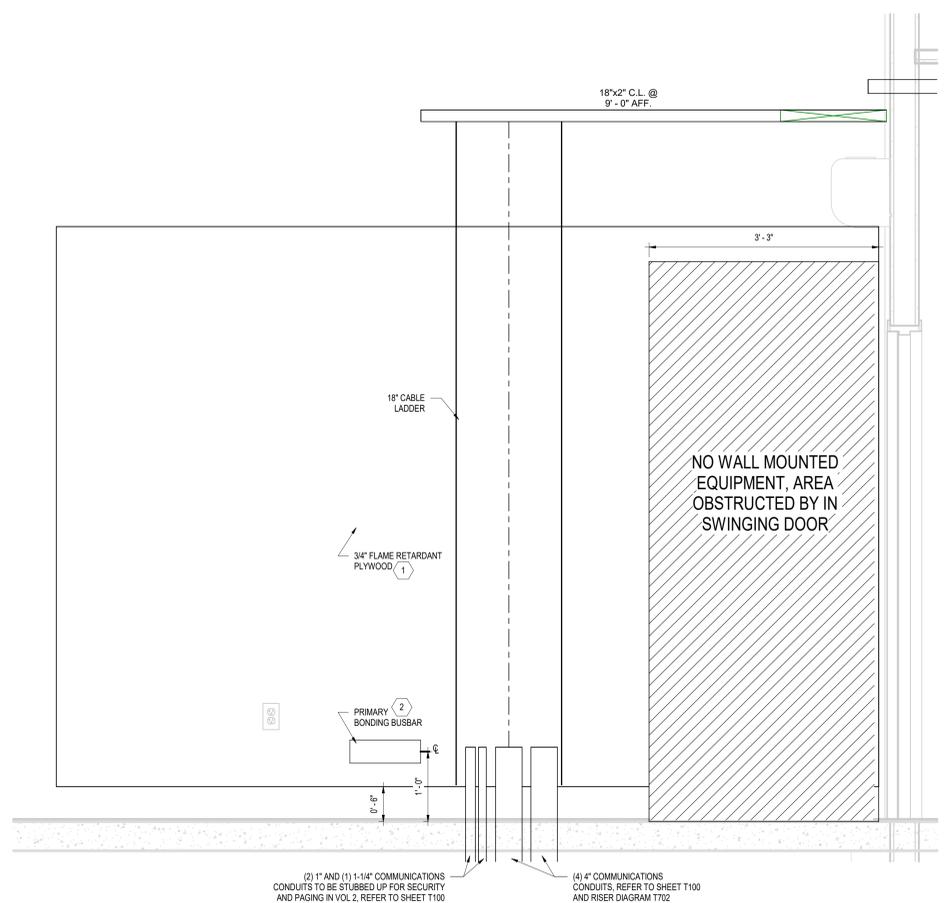
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PROJECT TITLE:
 ILM AIRPORT BOULEVARD AND
 PARKING IMPROVEMENTS - PHASE
 II

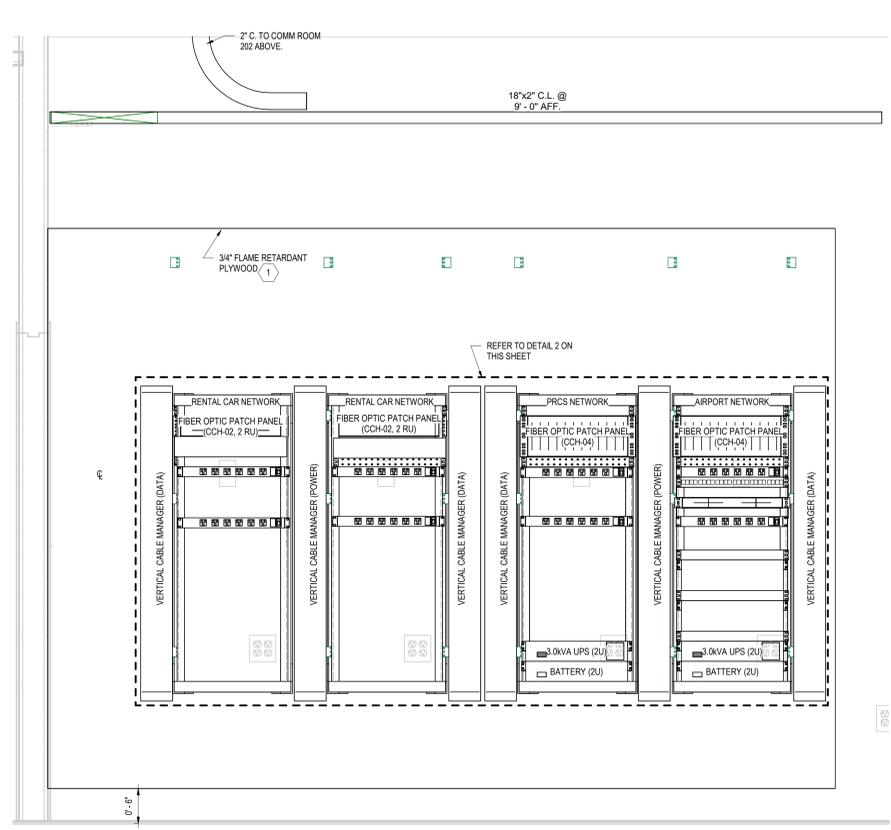
PROJECT ADDRESS:
 1740 AIRPORT BLVD.
 WILMINGTON, NC 28405

KEY NOTES:

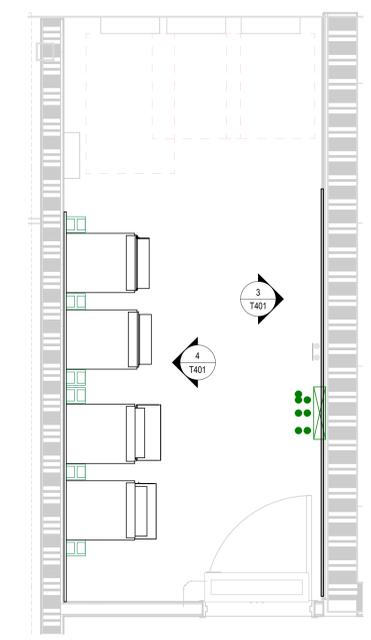
1. PROVIDE 3/4" FLAME RETARDANT PLYWOOD MOUNTED TO CONCRETE WALLS USING ANCHORS. PAINT WITH TWO COATS OF WHITE FLAME RETARDANT ENAMEL ON ALL SIX (6) SIDES. MASK UL LABELS FOR AHJ INSPECTION AFTER INSTALLATION.
2. PROVIDE PRIMARY BONDING BUSBAR, REFER TO DETAIL 7 ON SHEET T501.
3. WALL-MOUNTED ENCLOSURE FOR SECURITY EQUIPMENT SHALL BE PROVIDED BY THE DIVISION 28 CONTRACTOR, COORDINATE INSTALLATION WITH THE SECURITY INSTALLER.
4. PROVIDE FOUR (4) WALL-MOUNTED RACKS FOR AIRPORT, PARKING CONTROL, AND RENTAL CAR NETWORKS, REFER TO DETAIL 2 FOR ADDITIONAL INFORMATION.
5. PROVIDE VERTICAL CABLE MANAGER MOUNTED TO WALL BETWEEN RACKS. BUNDLE CABLE TO C.L. ABOVE.
6. NETWORK SWITCH PROVIDED BY THE OWNER AND INSTALLED BY THE CONTRACTOR, COORDINATE WITH THE OWNER'S IT REPRESENTATIVE.
7. PROVIDE RACK-MOUNTED SPD FOR SURVEILLANCE CAMERAS, REFER TO DETAIL 5 ON SHEET T503 FOR ADDITIONAL INFORMATION.
8. PROVIDE RACK MOUNTED UPS, CONTRACTOR SHALL COORDINATE RECEPTACLE REQUIREMENTS WITH DIVISION 26, REFER TO ELECTRICAL DRAWINGS FOR ELECTRICAL CIRCUITS PROVIDED BY DIV. 26. REFER TO DETAIL 1 ON SHEET T503 FOR ADDITIONAL INFORMATION.
9. PROVIDE RACK MOUNTED UPS, CONTRACTOR SHALL COORDINATE RECEPTACLE REQUIREMENTS WITH DIVISION 26, REFER TO ELECTRICAL DRAWINGS FOR ELECTRICAL CIRCUITS PROVIDED BY DIV. 26. REFER TO DETAIL 3 ON SHEET T503 FOR ADDITIONAL INFORMATION.
10. MAKE PROVISIONS FOR RACK MOUNTED UPS, CONTRACTOR SHALL COORDINATE RECEPTACLE REQUIREMENTS WITH DIVISION 26, REFER TO ELECTRICAL DRAWINGS FOR ELECTRICAL CIRCUITS PROVIDED BY DIV. 26. REFER TO DETAIL 3 ON SHEET T503 FOR ADDITIONAL INFORMATION.



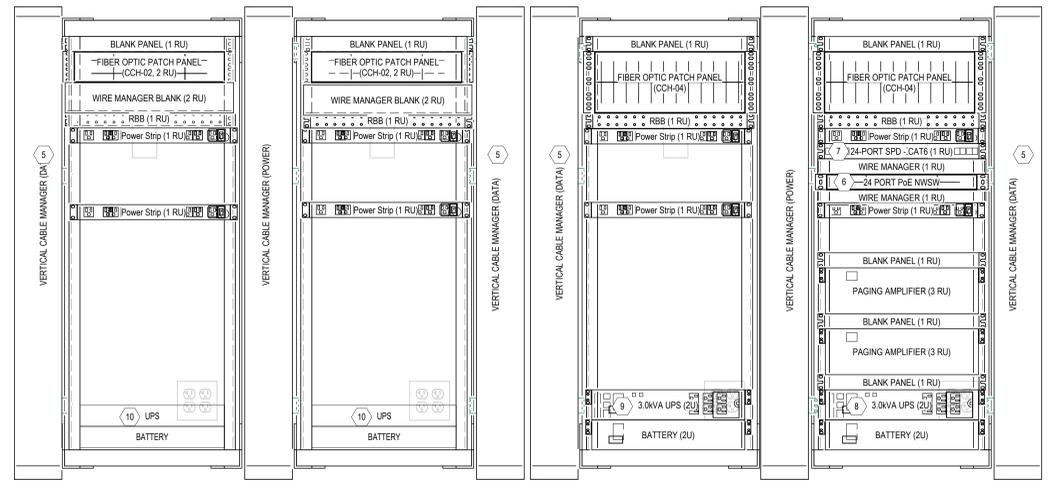
3 PARTIAL WEST WALL ELEVATION - ELECTRIC ROOM 102
 SCALE: 1" = 1'-0"



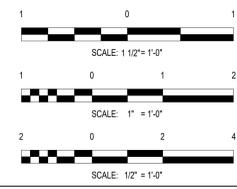
4 PARTIAL EAST WALL ELEVATION - ELECTRIC ROOM 102
 SCALE: 1" = 1'-0"



1 ENLARGED PLAN - ELECTRIC ROOM 102
 SCALE: 1/2" = 1'-0"



2 RACK ELEVATION - ELECTRIC ROOM 102
 SCALE: 1/2" = 1'-0"



REVISIONS

NO.	DESCRIPTION	DATE
1	Addendum 1	4/10/2025

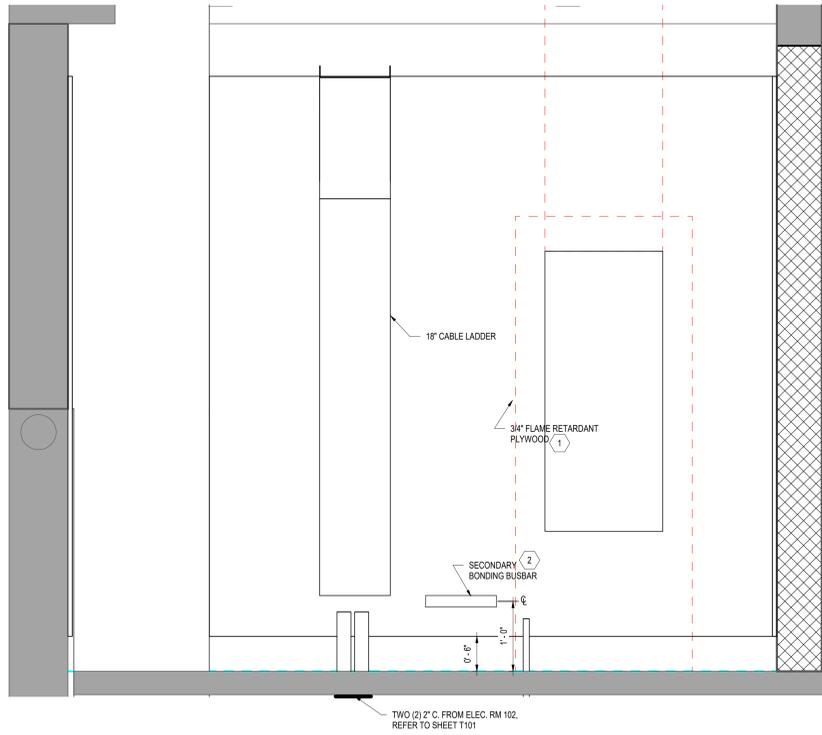
DATE ISSUED: 03/14/2025
 REVIEWED BY: JAP
 DRAWN BY: RJF
 DESIGNED BY: RJF
 PROJECT NUMBER:
 2003-0070-006
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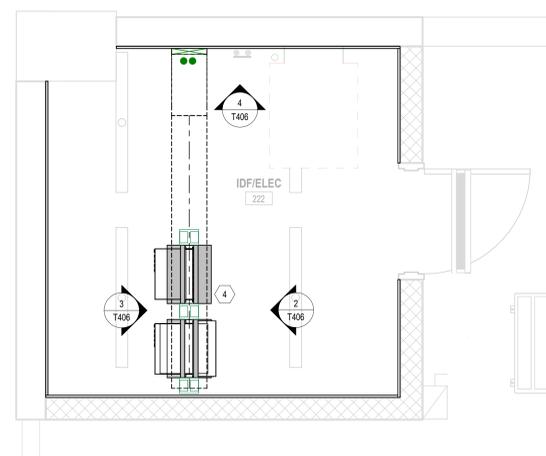
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 ENLARGED
 COMMUNICATIONS
 PLANS

SHEET ID:
T401

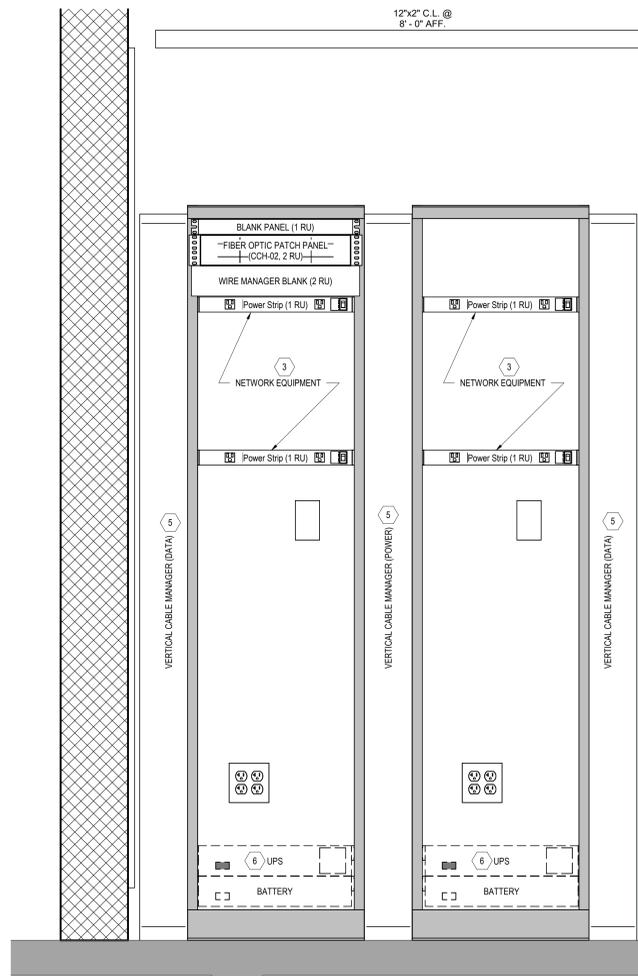
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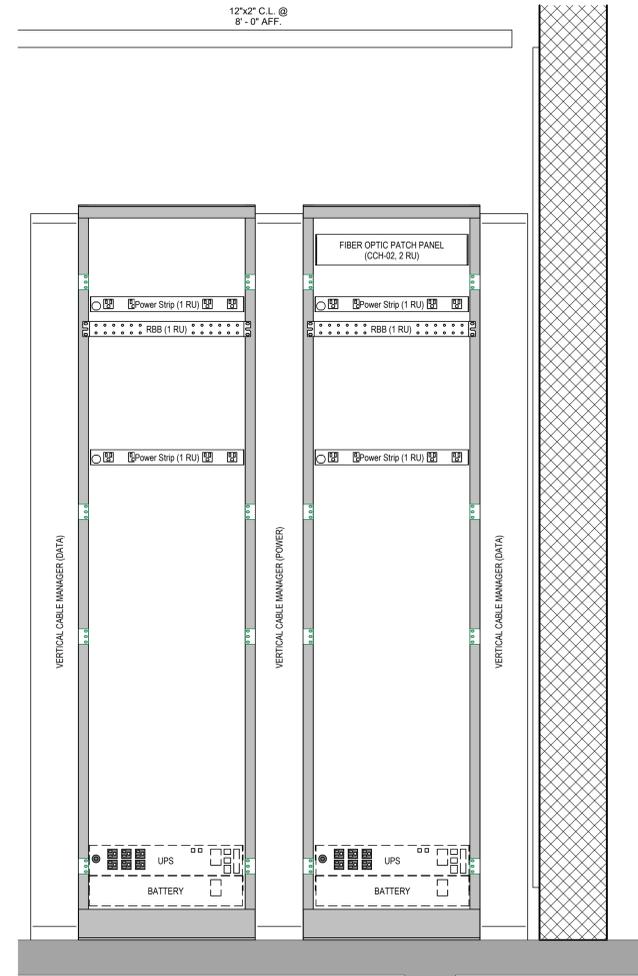
4 EAST WALL ELEVATION - IDF 222
SCALE: 1" = 1'-0"



1 ENLARGED PLAN - IDF 222
SCALE: 1/2" = 1'-0"



2 IDF 222 - FRONT RACK ELEVATION
SCALE: 1 1/2" = 1'-0"



3 IDF 222 - REAR RACK ELEVATION
SCALE: 1 1/2" = 1'-0"

- NOTES:**
1. ALL EQUIPMENT, DEVICES AND CABLING SHALL BE NEW AND PROVIDED BY THE CONTRACTOR UNLESS OTHERWISE NOTED.
 2. REFER TO COMMUNICATIONS INTERCONNECT AND RISER DIAGRAMS ON SHEETS T702 AND T703 FOR CABLE AND CONDUIT REQUIREMENTS.
 3. CONTRACTOR SHALL COORDINATE WORK WITH THE ELECTRICAL CONTRACTOR AND OTHER TRADES AS REQUIRED.
 4. NETWORK SWITCHES SHALL BE PROVIDED BY THE OWNER AND INSTALLED BY THE CONTRACTOR. COORDINATE WITH THE OWNER'S IT REPRESENTATIVE.
 5. CONDUIT (C) AND CABLE LADDER (C.L.) ROUTING SHOWN IS SCHEMATIC IN NATURE. ACTUAL ROUTING SHALL BE DETERMINED ACCORDING TO FIELD CONDITIONS AND AS COORDINATED WITH OTHER TRADES.
 6. APPROVED UL DEVICES SHALL BE USED TO SEAL PENETRATIONS THROUGH FIRE RATED WALLS.

- KEY NOTES:**
1. PROVIDE 3/4" FLAME RETARDANT PLYWOOD MOUNTED TO CONCRETE WALLS USING ANCHORS. PAINT WITH TWO COATS OF WHITE FLAME RETARDANT ENAMEL ON ALL SIX (6) SIDES. MASK UL LABELS FOR AHJ INSPECTION AFTER INSTALLATION.
 2. PROVIDE SECONDARY BONDING BUSBAR. REFER TO DETAIL 8 ON SHEET T501.
 3. NETWORK EQUIPMENT (SWITCHES, MEDIA CONVERTERS, ETC.) PROVIDED AND INSTALLED BY THE PARKING CONTROL VENDORS. COORDINATE WITH THE OWNER'S IT REPRESENTATIVE.
 4. PROVIDE TWO (2) FLOOR MOUNTED TWO POST RACKS FOR AIRPORT, AND PARKING CONTROL NETWORKS. REFER TO DETAIL 2 FOR ADDITIONAL INFORMATION.
 5. PROVIDE VERTICAL CABLE MANAGER BETWEEN RACKS.
 6. MAKE PROVISIONS FOR RACK MOUNTED UPS. CONTRACTOR SHALL COORDINATE RECEPTACLE REQUIREMENTS WITH DIVISION 26. REFER TO ELECTRICAL DRAWINGS FOR ELECTRICAL CIRCUITS PROVIDED BY DIV. 26. REFER TO DETAIL 3 ON SHEET T503 FOR ADDITIONAL INFORMATION.

RS&H

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PROJECT TITLE:
ILM AIRPORT BOULEVARD AND PARKING IMPROVEMENTS - PHASE II

PROJECT ADDRESS:
1740 AIRPORT BLVD.
WILMINGTON, NC 28405

REVISIONS

NO.	DESCRIPTION	DATE
1	Addendum 1	4/10/2025

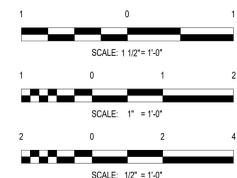
DATE ISSUED: 03/14/2025
REVIEWED BY: JAP
DRAWN BY: RJF
DESIGNED BY: RJF
PROJECT NUMBER:
2003-0070-006
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SHEET TITLE:
ENLARGED COMMUNICATIONS PLANS

SHEET ID:
T406

PROJECT STATUS:
100% BID SET



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WIRELESS ACCESS POINT (WAP) SCHEDULE						
ID NUMBER	IDF ROOM	CABLE TYPE	CABLE COLOR	CABLE DESCRIPTION	DETAIL	DESCRIPTION
WAP-NORTH	COMM ENCLOSURE	CAT6	BLUE	(1) CAT6 WITH MALE RJ45 CONNECTOR	1/7505	PROVIDE UBIQUITI MODEL US-MESH OUTDOOR ACCESS POINT INTEGRATED INTO SECURITY POLE MODULE. CONTRACTOR SHALL COORDINATE WITH THE OWNER TO CONFIRM MODEL OF WAP TO BE PROVIDED PRIOR TO ORDERING. COORDINATE ORDERING/INSTALLATION REQUIREMENTS WITH THE POLE MANUFACTURER.
WAP-SOUTH	ELEC 102	CAT6	BLUE	(1) CAT6 WITH MALE RJ45 CONNECTOR	1/7505	PROVIDE UBIQUITI MODEL US-MESH OUTDOOR ACCESS POINT INTEGRATED INTO SECURITY POLE MODULE. CONTRACTOR SHALL COORDINATE WITH THE OWNER TO CONFIRM MODEL OF WAP TO BE PROVIDED PRIOR TO ORDERING. COORDINATE ORDERING/INSTALLATION REQUIREMENTS WITH THE POLE MANUFACTURER.

- NOTES:**
- THESE DETAILS ARE SCHEMATIC IN NATURE AND MAY NOT SHOW ALL EQUIPMENT OR CONNECTIONS REQUIRED. THEY ARE INTENDED TO ILLUSTRATE TYPICAL EQUIPMENT LAYOUTS.
 - ALL EQUIPMENT, DEVICES AND CABLING SHALL BE NEW UNLESS OTHERWISE NOTED.
 - REFER TO COMMUNICATIONS INTERCONNECT AND RISER DIAGRAMS ON SHEET T702 AND T703 FOR ADDITIONAL INFORMATION.
 - DIMENSIONS PROVIDED ARE FOR CONTRACTOR INFORMATION ONLY. VERIFY ALL DIMENSIONS IN THE FIELD.

- KEY NOTES:**
- PROVIDE GROUNDING AS REQUIRED SO THAT THE IMPEDANCE TO GROUND OF EACH GROUND ROD DOES NOT EXCEED 25 OHMS PRIOR TO ESTABLISHING CONNECTIONS TO OTHER GROUND ELECTRODES. THE FALL-OF-POTENTIAL GROUND IMPEDANCE TEST SHALL BE USED AS DESCRIBED BY AMERICAN NATIONAL STANDARDS INSTITUTE/INSTITUTE OF ELECTRICAL AND ELECTRONIC ENGINEERS (ANSI/IEEE) STANDARD 81, TO VERIFY THIS REQUIREMENT.
 - FINAL OVERALL HEIGHT IS DEPENDENT UPON SELECTION OF COMPONENTS BY THE OWNER AND MAY VARY WITH THE APPROVED CONFIGURATION.
 - COORDINATE EXACT MANUFACTURER MODEL TO BE PROVIDED WITH THE POLE WITH DIVISION 28 CONTRACTOR.

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PROJECT TITLE:
 ILM AIRPORT BOULEVARD AND
 PARKING IMPROVEMENTS - PHASE
 II

PROJECT ADDRESS:
 1740 AIRPORT BLVD.
 WILMINGTON, NC 28405

REVISIONS

NO.	DESCRIPTION	DATE
1	Addendum 1	4/10/2025

DATE ISSUED: 03/14/2025
 REVIEWED BY: JAP
 DRAWN BY: RJF
 DESIGNED BY: RJF

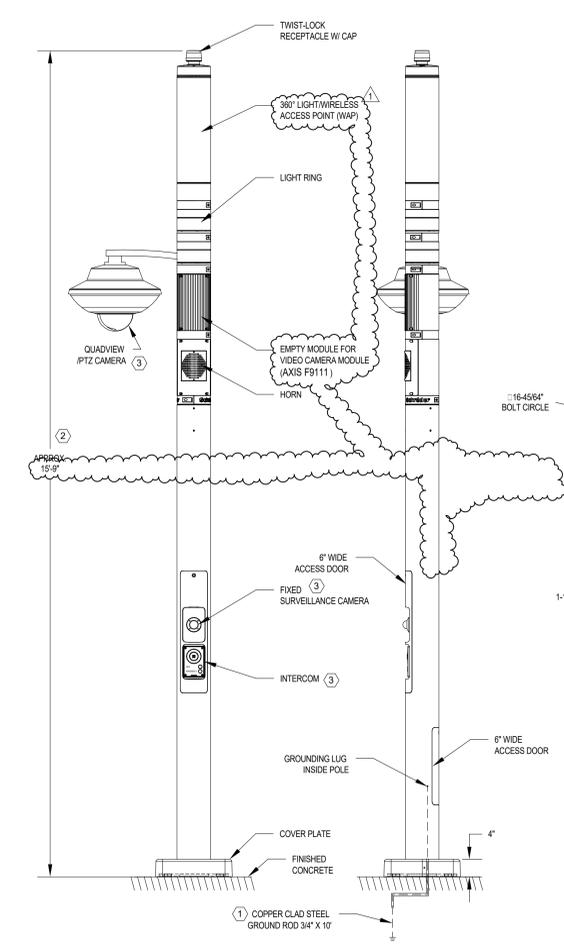
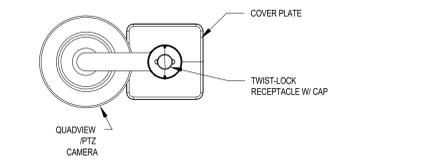
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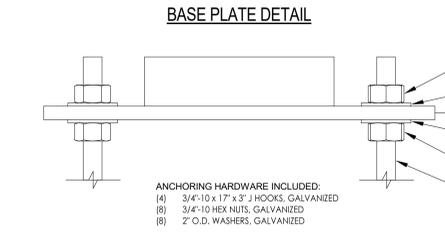
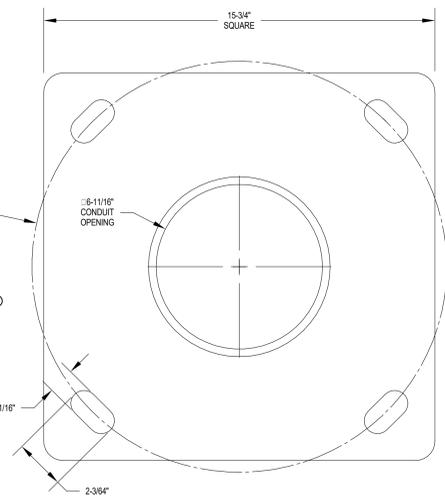
SHEET TITLE:
 COMMUNICATIONS
 DETAILS

SHEET ID:
 T504

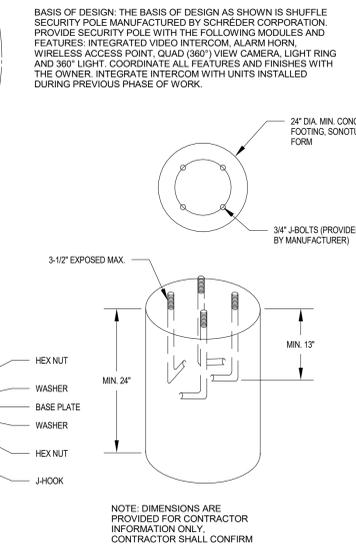
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 100% BID SET



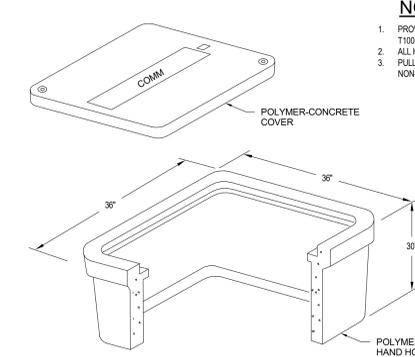
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 SCALE: N.T.S.



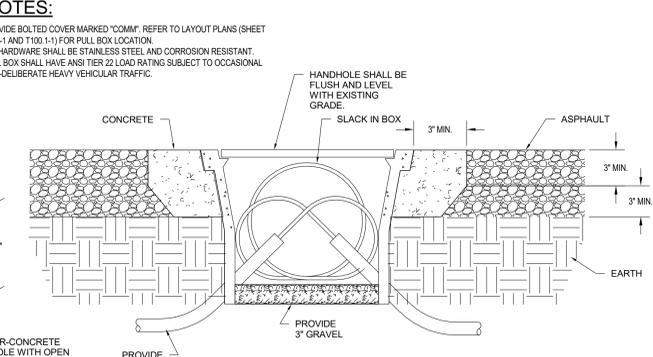
2 SECURITY POLE FOOTING - TYPICAL
 SCALE: N.T.S.



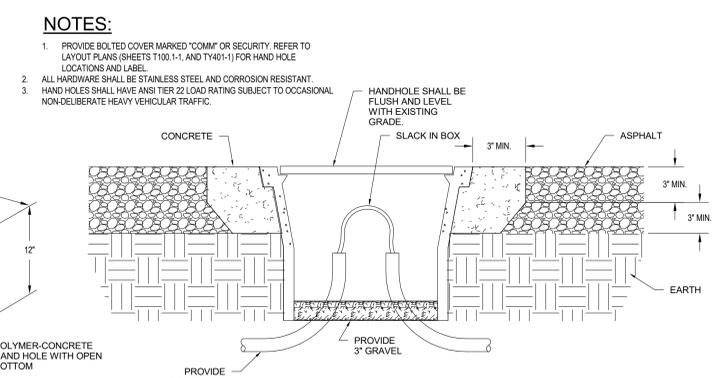
3 TELECOM HAND HOLE
 SCALE: N.T.S.



4 TELECOM PULL BOX
 SCALE: N.T.S.

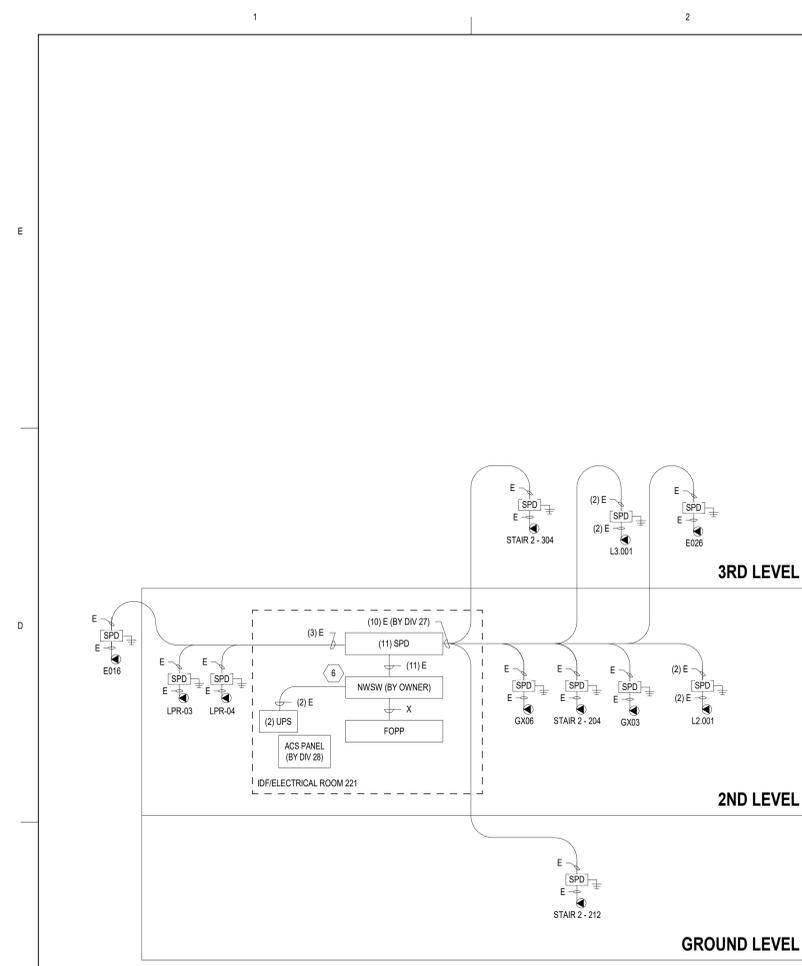


- NOTES:**
- PROVIDE BOLTED COVER MARKED "COMM". REFER TO LAYOUT PLANS (SHEET T100-1 AND T100-1-1) FOR PULL BOX LOCATION.
 - ALL HARDWARE SHALL BE STAINLESS STEEL AND CORROSION RESISTANT.
 - PULL BOX SHALL HAVE ANS I TIER 22 LOAD RATING SUBJECT TO OCCASIONAL NON-DELIBERATE HEAVY VEHICULAR TRAFFIC.

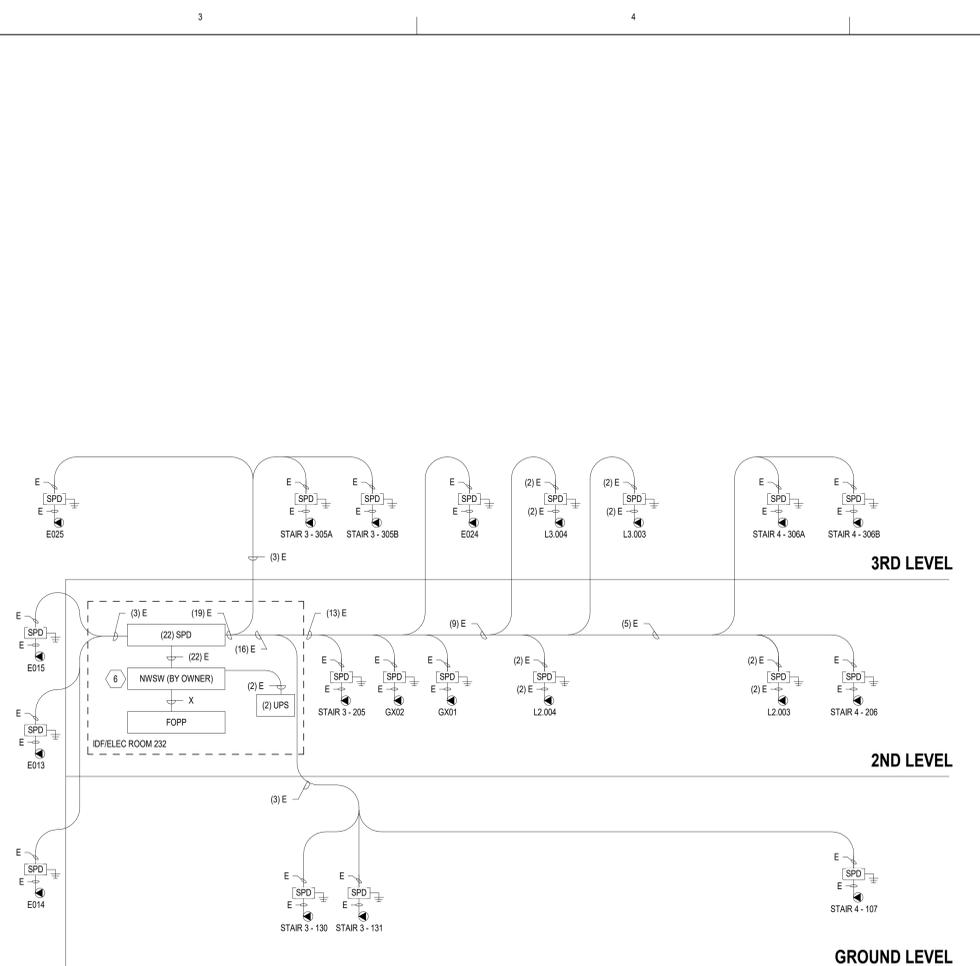


- NOTES:**
- PROVIDE BOLTED COVER MARKED "COMM" OR SECURITY. REFER TO LAYOUT PLANS (SHEETS T100-1-1 AND T140-1-1) FOR HAND HOLE LOCATIONS AND LABEL.
 - ALL HARDWARE SHALL BE STAINLESS STEEL AND CORROSION RESISTANT.
 - HAND HOLES SHALL HAVE ANS I TIER 22 LOAD RATING SUBJECT TO OCCASIONAL NON-DELIBERATE HEAVY VEHICULAR TRAFFIC.

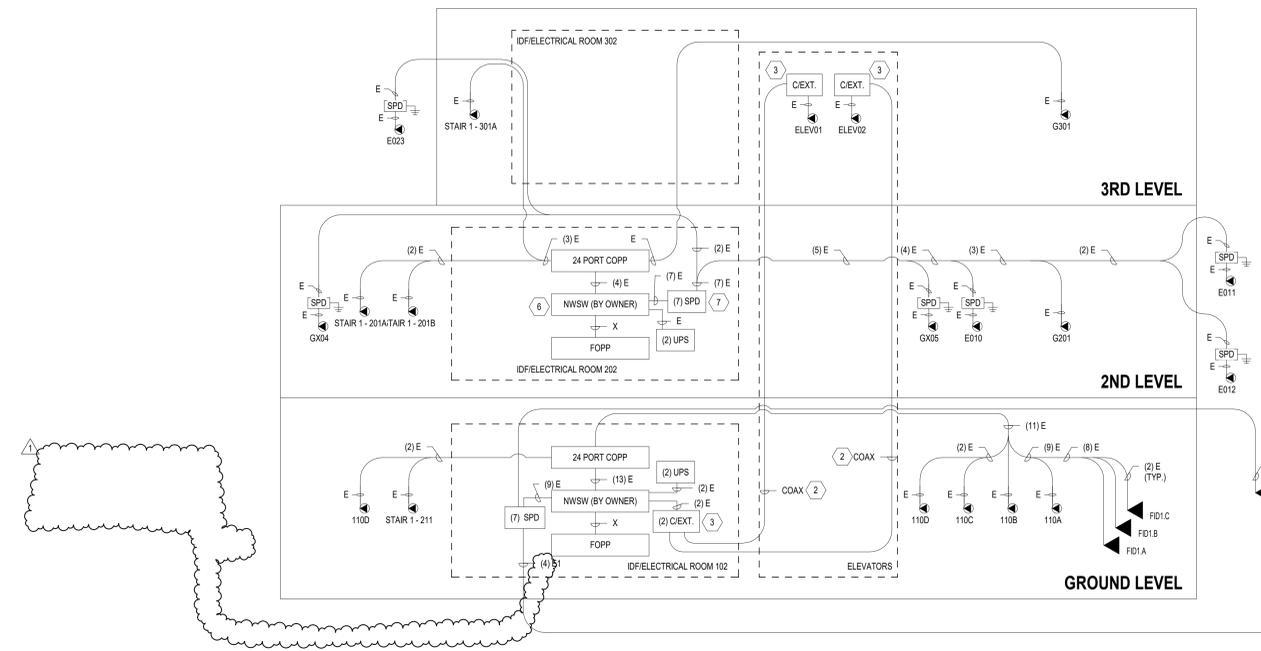
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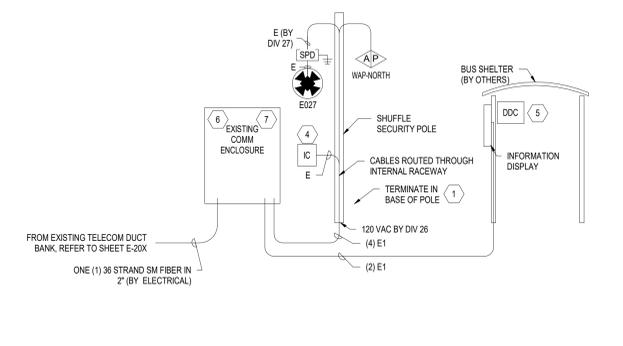
3 IDF 221 COMM INTERCONNECT DIAGRAM
SCALE: 1/16" = 1'-0"



4 IDF 232 COMM INTERCONNECT DIAGRAM
SCALE: 1/16" = 1'-0"



1 IDF 102 COMM INTERCONNECT DIAGRAM
SCALE: 1/16" = 1'-0"



2 NORTH BUS SHELTER COMM INTERCONNECT DIAGRAM
SCALE: 1/8" = 1'-0"

- NOTES:**
- THIS DIAGRAM IS SCHEMATIC IN NATURE AND MAY NOT SHOW ALL EQUIPMENT OR CONNECTIONS REQUIRED. CONTRACTOR SHALL PROVIDE A COMPLETE AND WORKING SYSTEM AS SHOWN IN THE DRAWINGS AND DESCRIBED IN THE WRITTEN SPECIFICATIONS.
 - ALL EQUIPMENT, DEVICES AND CABLEING SHALL BE NEW AND PROVIDED BY THE CONTRACTOR UNLESS OTHERWISE NOTED.
 - REFER TO RISER DIAGRAMS FOR ADDITIONAL INFORMATION.
 - REFER TO THE SITE PLAN AND FLOOR PLANS FOR TERMINATION LOCATIONS.
 - CONTRACTOR SHALL COORDINATE THE TERMINATION OF FIBER OPTIC CABLES WITH THE OWNER. REFER TO COMMUNICATIONS SITE PLAN FOR ROUTING OF NEW AND EXISTING DUCT BANK.
 - ALL NETWORK SWITCHES SHALL BE FURNISHED BY THE OWNER AND INSTALLED BY THE CONTRACTOR. COORDINATE WORK WITH THE OWNER'S IT REPRESENTATIVE.
 - COORDINATE ALL FINAL CAMERA AND WAP LOCATIONS WITH THE OWNER PRIOR TO INSTALLATION.

- KEY NOTES:**
- REFER TO MANUFACTURER'S INSTALLATION INSTRUCTIONS FOR TERMINATION AND GROUNDING REQUIREMENTS. COORDINATE ALL WORK WITH THE ELECTRICAL AND CIVIL CONTRACTORS.
 - ELEVATOR CAB VIDEO SIGNALS SHALL BE TRANSMITTED OVER COAX CABLES WITHIN ELEVATOR TRAVELING CABLE. COORDINATE WITH ELEVATOR INSTALLER.
 - PROVIDE ETHERNET OVER COAX EXTENDER KIT. REFER TO WRITTEN SPECIFICATIONS.
 - IP ADDRESSABLE EMERGENCY (BLUE LIGHT) INTERCOM STATIONS SHALL BE MOUNTED TO SECURITY POLES. INTERCOM STATIONS SHALL BE PROGRAMMED TO CALL THE AIRPORT COMM CENTER.
 - INFORMATION DISPLAYS SHALL BE CONTROLLED VIA IP ADDRESSABLE DIGITAL DISPLAY CONTROLLERS (DDC) COLOCATED WITH EACH DISPLAY. DDCS AND ASSOCIATED CABLEING SHALL BE LOCATED IN A SECURE LOCATION AWAY FROM PUBLIC ACCESS.
 - NETWORK DEVICE(S) (ETHERNET SWITCH, MEDIA CONVERTERS) SHALL BE OWNER FURNISHED AND CONTRACTOR INSTALLED. CONTRACTOR SHALL COORDINATE WITH THE OWNER'S IT REPRESENTATIVE.
 - PROVIDE PANEL MOUNT SURGE PROTECTION DEVICE IN EXISTING COOM ENCLOSURE. REFER TO DETAIL 4 ON SHEET 1503.

CABLE LEGEND

ID	DESCRIPTION	DEVICE
A	3-22 AWG SHIELDED	CARD READER
B	4-22 AWG UNSHIELDED	MISC. INPLT (DPS/EXTD)
C	4-14 AWG UNSHIELDED	ANNUNCIATOR (HORN/STROBE)
D	2-14 AWG UNSHIELDED	MISC. OUTPUT (LOCK) LENGTH < 100'
D	2-12 AWG UNSHIELDED	MISC. OUTPUT (LOCK) LENGTH < 200'
E	CATEGORY 6 UTP	ETHERNET (VOICE/DATA/VIDEO)
E1	GEL FILLED CATEGORY 6 UTP	ETHERNET (VOICE/DATA/VIDEO) - WET LOCATIONS
E2	GEL FILLED CATEGORY 6 STP	ETHERNET (VOICE/DATA/VIDEO) - WET LOCATIONS
F	2-18 AWG UNSHIELDED	FIRE ALARM RELAY AND MISC. I/O
G	8-22 AWG UNSHIELDED	GATE OPERATOR I/O
K	KEYBOARD/VIDEO/COMHOUSE	KVM SWITCH CONTROL CABLE
S	2-12 AWG UNSHIELDED	UNSHIELDED SPEAKER CABLE
T	RG-6U COAX	COAX CABLE TELEVISION
V	22 AWG UTP	VOLUME CONTROL
X	SINGLE-MODE FIBER	FIBER OPTIC PATCH CABLE

- SHUTTLE BUS TRACKING:**
- SHUTTLE BUS TRACKING SYSTEM SHALL BE AN EXTENSION OF THE SOLUTION PROVIDED DURING THE PREVIOUS PHASE OF WORK. CONTRACTOR SHALL PROVIDE ADDITIONAL HARDWARE AS REQUIRED TO ADD ADDITIONAL MONITORS ADDED DURING THIS PHASE.
 - CONFIGURE MONITOR TO MATCH THOSE DEPLOYED DURING PREVIOUS PHASE OF WORK TO DISPLAY SHUTTLE ARRIVAL INFORMATION. CONTRACTOR SHALL ASSIST THE OWNER WITH ACCOUNT/LOGIN TO MANAGE THE SYSTEM FROM AN EXISTING AIRPORT WORKSTATION.
 - CONTRACTOR'S PROPOSAL SHALL INCLUDE ALL HARDWARE, LICENSES, AND STARTUP COSTS FOR THE FIRST YEAR'S OPERATION (THROUGH THE WARRANTY PERIOD) AND ONGOING ANNUAL COST IN INCREMENTS OF 1 YEAR, 3 YEARS, AND 5 YEARS.

RS&H
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North Carolina License Nos. 50073 *
F-0493 * C-28



PROJECT TITLE:
ILM AIRPORT BOULEVARD AND
PARKING IMPROVEMENTS - PHASE
II

PROJECT ADDRESS:
1740 AIRPORT BLVD.
WILMINGTON, NC 28405

REVISIONS

NO.	DESCRIPTION	DATE
1	Addendum 1	4/10/2025

DATE ISSUED: 03/14/2025
REVIEWED BY: JAP
DRAWN BY: RJF
DESIGNED BY: RJF
PROJECT NUMBER:
2003-0070-006
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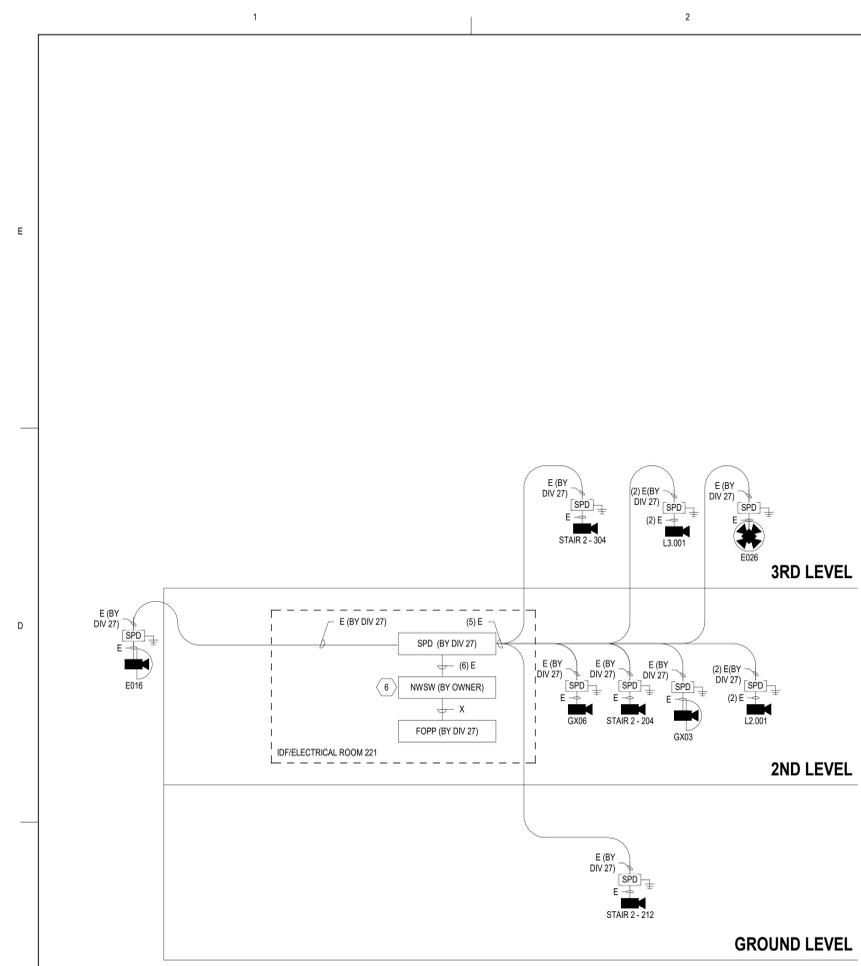
SEAL:
FOR REVIEW ONLY
NOT FOR CONSTRUCTION

SHEET TITLE:
COMMUNICATIONS
INTERCONNECT
DIAGRAMS

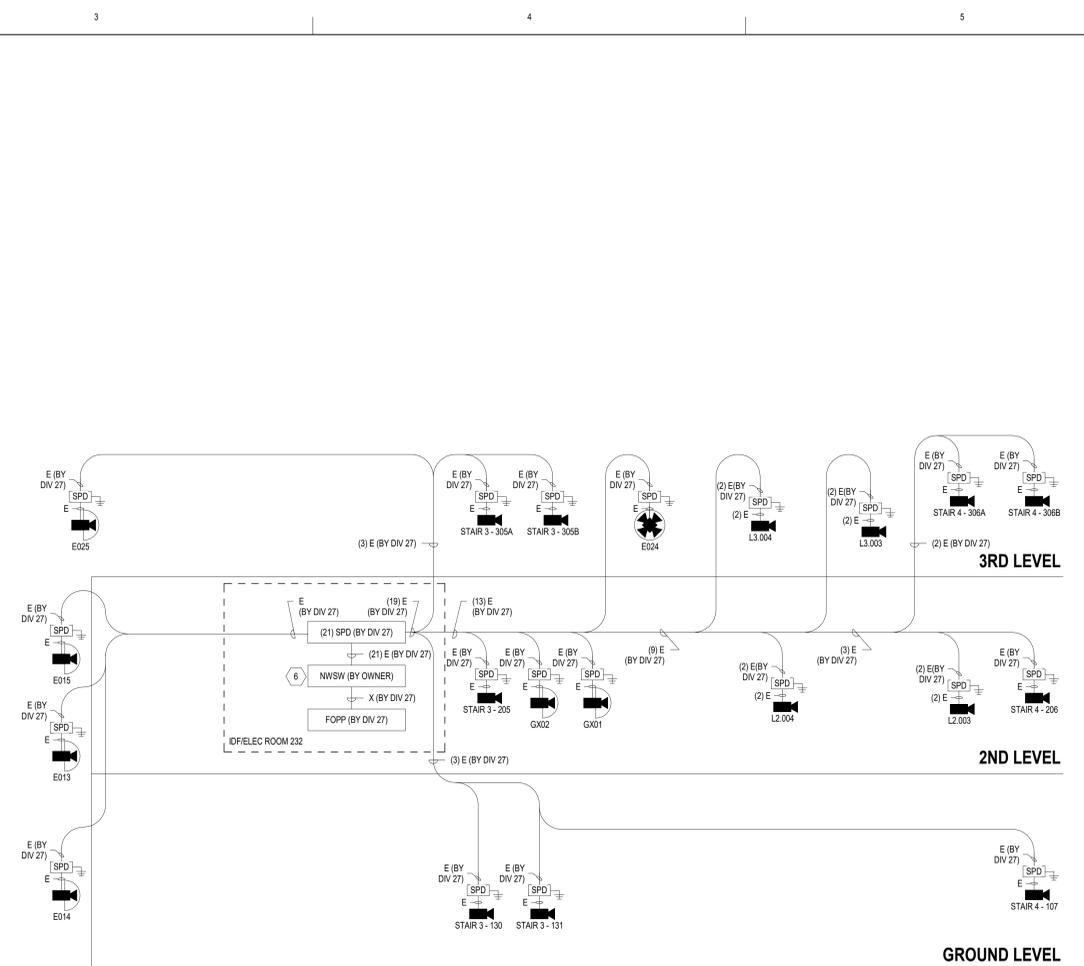
SHEET ID:
T704

PROJECT STATUS:
100% BID SET

4/10/2025 11:07:55 AM Autodesk Docs://10030070006_ILM_T04_Riser_4d Improv Design/20030070006_ILM_T04_Parking Garage and Shuttle Plaza_T_R04.rvt



3 IDF 221 SECURITY INTERCONNECT DIAGRAM
SCALE: 1/16" = 1'-0"

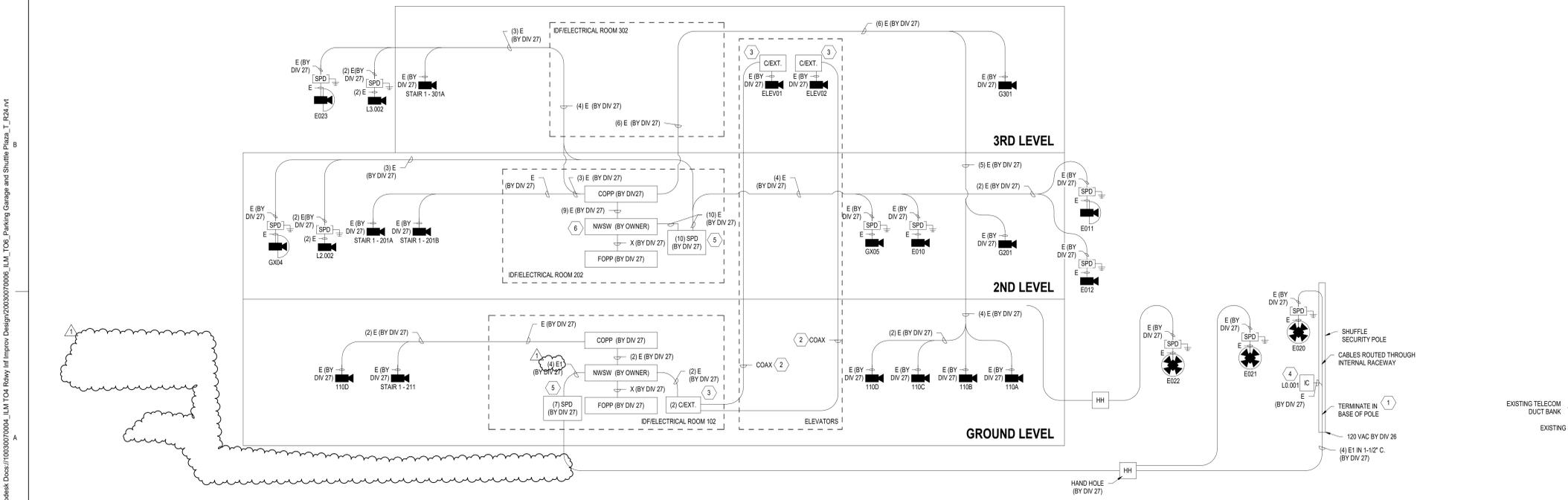


4 IDF 232 SECURITY INTERCONNECT DIAGRAM
SCALE: 1/16" = 1'-0"

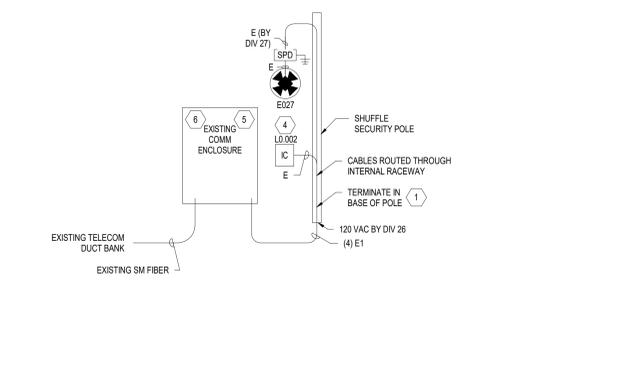
- NOTES:**
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 - REFER TO RISER DIAGRAMS FOR ADDITIONAL INFORMATION.
 - REFER TO THE SITE PLAN AND FLOOR PLANS FOR TERMINATION LOCATIONS.
 - REFER TO T SERIES PLANS DATA CABLES AND CONDUITS PROVIDED BY THE COMMUNICATIONS (DIV 27) CONTRACTOR. COORDINATE CAMERA OUTLET INSTALLATION WITH THE COMMUNICATIONS CONTRACTOR.
 - ALL NETWORK SWITCHES SHALL BE FURNISHED BY THE OWNER AND INSTALLED BY THE CONTRACTOR. COORDINATE WORK WITH THE OWNER'S IT REPRESENTATIVE.
 - COORDINATE ALL FINAL CAMERA LOCATIONS WITH THE OWNER PRIOR TO INSTALLATION.

- KEY NOTES:**
- REFER TO MANUFACTURER'S INSTALLATION INSTRUCTIONS FOR TERMINATION AND GROUNDING REQUIREMENTS. COORDINATE ALL WORK WITH THE ELECTRICAL AND CIVIL CONTRACTORS.
 - ELEVATOR CAB VIDEO SIGNALS SHALL BE TRANSMITTED OVER COAX CABLES WITHIN ELEVATOR TRAVELING CABLE. COORDINATE WITH ELEVATOR INSTALLER.
 - PROVIDE ETHERNET OVER COAX EXTENDER KIT. REFER TO WRITTEN SPECIFICATIONS.
 - IP ADDRESSABLE EMERGENCY (BLUE LIGHT) INTERCOM STATIONS SHALL BE MOUNTED TO SECURITY POLES. INTERCOM STATIONS SHALL BE PROGRAMMED TO CALL THE AIRPORT COMM CENTER.
 - PANEL MOUNT SURGE PROTECTION DEVICE IN EXISTING COMM ENCLOSURE SHALL BE PROVIDED BY DIV 27. REFER TO DETAIL 4 ON SHEET T503.
 - NETWORK DEVICE(S) (ETHERNET SWITCH, MEDIA CONVERTERS) SHALL BE OWNER FURNISHED AND CONTRACTOR INSTALLED. CONTRACTOR SHALL COORDINATE WITH THE OWNER'S IT REPRESENTATIVE.

ID	DESCRIPTION	DEVICE
A	3-22 AWG SHIELDED	CARD READER
B	4-22 AWG UNSHIELDED	MISC. INPUT (DPS/REXTD)
C	4-14 AWG UNSHIELDED	ANNUNCIATOR (HORN/STROBE)
D	2-14 AWG UNSHIELDED	MISC. OUTPUT (LOCK LENGTH < 100')
D	2-12 AWG UNSHIELDED	MISC. OUTPUT (LOCK LENGTH < 200')
E	CATEGORY 6 UTP	ETHERNET (VOICE/DATA/VIDEO)
E1	GEL FILLED CATEGORY 6 UTP	ETHERNET (VOICE/DATA/VIDEO) - WIG WET LOCATIONS
E2	GEL FILLED CATEGORY 6 STP	ETHERNET (VOICE/DATA/VIDEO) - WIG WET LOCATIONS
F	2-18 AWG UNSHIELDED	FIRE ALARM RELAY AND MISC. I/O
G	3-22 AWG UNSHIELDED	GATE OPERATOR I/O
K	KEYBOARD/VIDEO/MOUSE	KVM SWITCH CONTROL CABLE
S	2-12 AWG UNSHIELDED	UNSHIELDED SPEAKER CABLE
T	RG-6U COAX	COAX CABLE TELEVISION
V	22 AWG UTP	VOLUME CONTROL
X	SINGLE-MODE FIBER	FIBER OPTIC PATCH CABLE



1 IDF 102 SECURITY INTERCONNECT DIAGRAM
SCALE: 1/16" = 1'-0"



2 NORTH BUS SHELTER INTERCONNECT DIAGRAM
SCALE: 1/8" = 1'-0"

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PROJECT TITLE:
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II

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NO.	DESCRIPTION	DATE
1	Addendum 1	4/10/2025

DATE ISSUED: 03/14/2025
REVIEWED BY: JAP
DRAWN BY: RJF
DESIGNED BY: RJF

PROJECT NUMBER:
2003-0070-006
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SEAL:
FOR REVIEW ONLY
NOT FOR CONSTRUCTION

SHEET TITLE:
SECURITY
INTERCONNECT
DIAGRAMS

SHEET ID:
TY702

PROJECT STATUS:
100% BID SET

4/10/2025 11:08:20 AM Autodesk Docs://10030070006_ILM_T04_Rev04/Improv_Design/20030070006_ILM_T04_Parking Garage and Shuttle Plaza_T_R04.rvt

100% Bid Set Submittal - Addendum 1
Date: 4-10-2025

Project: ILM Airport Boulevard – Parking Improvements Program
Phase 2 – Volume 1

RS&H Project No.: 2003-0070-006

Revised Contract Documents. See the itemized list below.

Contract Drawings

G003 – APPENDIX B

REVISE update to Appendix B

G101 – PROJECT INFORMATION, BUILDING CODE ANALYSIS, AND LIFE SAFETY PLANS

REVISE north-east stair to match west stair design

REVISE Building Code Analysis

G102 – PROJECT INFORMATION, BUILDING CODE ANALYSIS, AND LIFE SAFETY PLANS

REVISE north-east stair to match west stair design

REVISE Building Code Analysis

G103 – PROJECT INFORMATION, BUILDING CODE ANALYSIS, AND LIFE SAFETY PLANS

REVISE north-east stair to match west stair design

REVISE Building Code Analysis

S001 – GENERAL STRUCTURAL NOTES

REVISE pile tip elevation note to be based on Reference Elevation 86'-0".

S011 – OVERALL FOUNDATION PLAN

REMOVE Stair 04 in SW corner of garage.

REVISE foundations at Grids B-9 and C-9 to receive future crossover column.

S013 – FOUNDATION PLAN – AREA B

REMOVE Stair 04 in SW corner of garage.

REVISE foundations at Grids B-9 and C-9 to receive future crossover column.

ADD missing PCC column call out.

S101 – OVERALL SLAB ON GRADE PLAN

REMOVE Stair 04 in SW corner of garage.

S103 – SLAB ON GRADE PLAN – AREA B

REMOVE Stair 04 in SW corner of garage.

S121 – OVERALL LEVEL 2 FRAMING PLAN

REMOVE Stair 04 in SW corner of garage.

REVISE precast column at Grid B-9 and extended spandrel to corner.

S122 – LEVEL 2 FRAMING PLAN – AREA A

ADD CMU IDF Rooms per RAC request.

S123 – LEVEL 2 FRAMING PLAN – AREA B

REMOVE Stair 04 in SW corner of garage.

REVISE precast column at Grid B-9 and extended spandrel to corner.

ADD CMU IDF Room per RAC request.

ADD slope call out to Ramp 1

S131 – OVERALL LEVEL 3 FRAMING PLAN

REMOVE Stair 04 in SW corner of garage.

REVISE precast column at Grid B-9 and extended spandrel to corner.

S133 – LEVEL 3 FRAMING PLAN – AREA B

REMOVE Stair 04 in SW corner of garage.

REVISE precast column at Grid B-9 and extended spandrel to corner.

S141 – CIRCULATION CORE FOUNDATION AND SLAB ON GRADE PLANS

ADD HSS post and section callouts for Overhead Door Jambs

ADD Circulation Core Slab on Grade Sheet Note #8

S142 - CIRCULATION CORE 2ND, 3RD, AND ROOF FRAMING PLANS

REVISE edge of deck at Stair 01 on 2nd and 3rd Floor Framing Plans.

ADD Section callout for HSS posts at Overhead Door Jambs

S151 – CANOPY DESIGN CRITERIA, DROP-OFF CANOPY PLANS

ADD/REVISE Roof Framing to accommodate metal roof deck

S156 – WALKWAY CANOPY FRAMING PLAN

ADD/REVISE Roof Framing to accommodate metal roof deck

S302 – LOW ROOF AND LIGHT TOWER SETIONS AND DETAILS

ADD Section A2 and B2 for HSS post at Overhead Door

S351 – OVERALL CANOPY SECTIONS

REVISE Dimensions and show additional steel members to accommodate metal roof deck

S355 – CANOPY FRAMING SECTIONS

REVISE Detail D3

S400 – STAIR 04 PLANS

REMOVE sheet from set.

S401 – STAIR 04 SECTIONS AND DETAILS

REMOVE sheet from set.

S601 - ACIP PILE AND PILE CAP SCHEDULE AND DETAILS

REMOVE PC-9SP from schedule.

A101 – OVERALL GROUND FLOOR PLAN

ADDED new IDF/ELECTRICAL ROOMS

REMOVED stair and extended precast form liner panels to corner.

A103 – PARTIAL GROUND FLOOR PLAN - AREA B

ADDED bollards and associated notes.

A104 – OVERALL SECOND FLOOR PLAN

ADDED IDF/ELECTRICAL ROOMS into garage infrastructure for rental car

REMOVED stair

ADDED new IDF/ELECTRICAL ROOMS

ADDED bollards and associated notes

A105– PARTIAL SECOND FLOOR PLAN - AREA A

ADDED IDF/ELECTRICAL ROOMS into garage infrastructure for rental car

REVISED location of walls

ADDED bollards and associated notes.

A106– PARTIAL SECOND FLOOR PLAN - AREA B

ADDED IDF/ELECTRICAL ROOMS into garage infrastructure for rental car

ADDED bollards and associated notes.

A112– SECOND FLOOR DRAINAGE PLAN

ADDED bollards and associated notes.

A121 – OVERALL GROUND FLOOR REFLECTED CEILING PLAN

ADDED bollards and associated notes.

A124 – OVERALL SECOND FLOOR REFLECTED CEILING PLAN

ADDED IDF/ELECTRICAL ROOMS into garage infrastructure for rental car

A125 – PARTIAL SECOND FLOOR REFLECTED CEILING PLAN – AREA A

ADDED IDF/ELECTRICAL ROOMS into garage infrastructure for rental car

A126 – PARTIAL SECOND FLOOR REFLECTED CEILING PLAN – AREA B

ADDED New IDF/ELECTRICAL Rooms

A161 – OVERALL ROOF PLAN

ADDED bollards and associated notes.

A201 – BUILDING ELEVATIONS

REMOVED stair and extended precast form liner panels to corner

ADDED note to reference plumbing for scupper information

ADDED NOTE FOR GALVANIZED STEEL RAIL - RFI 014

A312 – GARAGE WALL SECTIONS

ADDED Wall Section

A320 – CANOPIES SECTIONS

ADDED bollards and associated notes.

A401 – CIRCULATION CORE FIRST FLOOR ENLARGED PLAN AND REFLECTED CEILING PLAN

ADDED bollards and associated notes.

ADDED Reference to access gate elevation

ADDED note for galvanized steel fence - RFI 003

A413 – GARAGE EGRESS STAIR ENLARGED PLANS AND ELEVATIONS

REVISED Stair Tower to match others

REVISED Sheet name to correspond with updates

A416 – ENLARGED GARAGE PLANS AND INTERIOR ELEVATIONS

REVISED Sheet name to correspond with updates

A420 – ENLARGED CANOPY SECTIONS AND DETAILS

ADDED bollards and associated notes.

A503 – SECTION DETAILS

REVISED Updated height of fence - RFI 003

ADDED bollards and associated notes.

A510 – STAIR

REVISED Elevator and railing details

A601 – DOOR SCHEDULE

REVISED Door Types

A621 – ROOM FINISH SCHEDULE

REVISED Legend and Notes

A802 – OVERALL SECOND FLOOR INTERIOR FINISH PLAN

ADDED New IDF/ELECTRICAL Rooms

FX101 – LEVEL 1 FIRE PROTECTION PLAN

REMOVE Stair 4 in SW corner of garage

FX102 – LEVEL 2 FIRE PROTECTION PLAN

REMOVE Stair 4 in SW corner of garage

ADD IDF/ELEC Room 222 per RAC request

ADD IDF/ELEC Room 223 per RAC request

ADD IDF/ELEC Room 224 per RAC request

FX103 – LEVEL 3 FIRE PROTECTION PLAN

REMOVE Stair 4 in SW corner of garage

P111 – OVERALL FIRST LEVEL PLUMBING PLAN

REVISE primary and secondary storm piping location for egress stairs.

REVISE 1" domestic cold water piping location to accommodate location of IDF/ELEC 224 on second level.

P121 – OVERALL SECOND LEVEL PLUMBING PLAN

REVISE primary and secondary storm piping location for egress stairs.

ADDED condensate drainage piping for additional mechanical AC split units serving IT/ELEC rooms.

ADDED additional storm drain to bottom of Level 3/Level 2 ramp to account for ramp drainage.

REVISE location of hose bibb adjacent IDF/ELEC 224.

P131 – OVERALL THIRD LEVEL PLUMBING PLAN

REVISE primary and secondary storm piping location for egress stairs.

ADDED overflow/secondary scuppers to perimeter walls for overflow storm drainage.

ADDED primary storm drain and drainage piping and overflow/secondary scupper to roof area leading into Stair 3 adjacent intersection of grid B4.

REVISE 3/4" domestic cold water piping location and hose bibb to accommodate location of IDF/ELEC 224 on second level.

P701 – PLUMBING GARAGE STORM DRAINAGE RISER DIAGRAMS

REVISE primary storm drainage riser to reflect plan updates.

M121 – OVERALL SECOND LEVEL HVAC PLAN

ADDED additional AC split systems to serve new IT/ELEC rooms.

M402 – HVAC ENLARGED PLANS – ELEC/IDF ROOMS

REVISE sheet title

ADDED enlarged views to show additional locations for new split AC units serving the new IT/ELEC rooms.

M601 – HVAC ENLARGED PLANS – ELEC/IDF ROOMS

REVISE equipment schedule to include room name changes and additional AC split system serving the new IT/ELEC rooms.

T001 – COMMUNICATIONS GENERAL NOTES, SYMBOLS AND ABBREVIATIONS

UPDATED sheet index.

T100 – COMMUNICATIONS SITE PLAN

DELETED data outlets for surveillance cameras from walkway ramp.

T101 – COMMUNICATIONS PLAN – GROUND LEVEL

ADDED communications conduit for IDF/ELEC Rooms 222, 223 and 224 per RAC request.

T102 – COMMUNICATIONS PLAN – 2ND LEVEL

ADD IDF/ELEC Room 222 per RAC request

ADD IDF/ELEC Room 223 per RAC request

ADD IDF/ELEC Room 224 per RAC request

T401 – ENLARGED COMMUNICATIONS PLANS

UPDATED PRCS UPS to provisions only.

T406 – ENLARGED COMMUNICATIONS PLANS

NEW SHEET IDF/ELEC Room 222.

T407 – ENLARGED COMMUNICATIONS PLANS

NEW SHEET IDF/ELEC Room 223.

T408 – ENLARGED COMMUNICATIONS PLANS

NEW SHEET IDF/ELEC Room 224.

T504 – COMMUNICATIONS DETAILS

UPDATED Shuffle pole detail per manufacturer's standard options.

T702 – COMMUNICATIONS BACKBONE DIAGRAM

ADDED conduit and fiber to IDF/ELEC Rooms 222, 223 and 224.

T703 – COMMUNICATIONS RISER DIAGRAM

DELETED conduit and pull box to surveillance cameras from walkway ramp.

T704 – COMMUNICATIONS INTERCONNECT DIAGRAM

DELETED cat 6 cables to surveillance cameras from walkway ramp.

TY100 – COMMUNICATIONS SITE PLAN

DELETED surveillance cameras from the walkway ramp.

TY102 – OVERALL SECURITY PLAN – 2ND LEVEL

ADD IDF/ELEC Room 222 per RAC request

ADD IDF/ELEC Room 223 per RAC request

ADD IDF/ELEC Room 224 per RAC request

TY601 – SECURITY SCHEDULE

DELETED surveillance cameras from the walkway ramp.

TY702 – SECURITY INTERCONNECT DIAGRAMS

DELETED surveillance cameras from the walkway ramp.

EG111 – FIRST FLOOR ELECTRICAL GROUNDING PLAN

DELETED Grounding ring around SW Stair that was removed.

EG131 – LIGHTNING PROTECTION PLAN

DELETED LPS air terminals and conductors around SW Stair that was removed.

EL111 – FIRST FLOOR LIGHTING PLAN

DELETED SW Stair Lighting.

EL121 – SECOND FLOOR LIGHTING PLAN

DELETED SW Stair Lighting.

ADD Lighting in new IDF Rooms.

ADD Wall mounted lighting on North face of the garage.

EL131 – THIRD FLOOR LIGHTING PLAN

DELETED SW Stair Lighting.

ADD AND ADJUSTED SPACING OF Wall mounted lighting on South and East faces of the garage

EP111 – FIRST FLOOR POWER PLAN

DELETED SW Stair Receptacle

ADD Conduit routing for new panelboards on the second level

ADD Disconnect switches for transformers located ext. on grade

RELOCATED In Grade receptacle for furniture.

EP121 – SECOND FLOOR POWER PLAN

DELETED SW Stair.

ADD Callouts for Enlarged plans of new IDF Rooms.

ADD Tags for Disconnect Switch Sizes.

EP401 – ENLARGED ELECTRICAL POWER PLANS

ADD Conduits to new IDF room panel boards

EP402 – ENLARGED ELECTRICAL POWER PLANS

ADD Enlarged views of new IDF rooms

REVISED General Sheet Notes

EL602 – EXTERIOR LUMINAIRE SCHEDULE

DELETED HX11 & HX12 from luminaire schedule.

EP601 – ELECTRICAL ONE LINE DIAGRAM

REVISED One Line Diagram

EP602 – ELECTRICAL POWER PANEL SCHEDULES

REVISED Loads on Panel Schedules

EP603 – ELECTRICAL POWER PANEL SCHEDULES

ADD New Sheet with New IDF Room Panel Schedules.

Specifications

Table of Contents

REVISED. Specification 05 73 13 Glazing Decorative Metal Railing and specification 07 42 13.33 Metal Composite Material Wall Panels added to Table of Contents.

21 10 00 – Sprinkler and Standpipe Systems

REPLACE specification in its entirety.

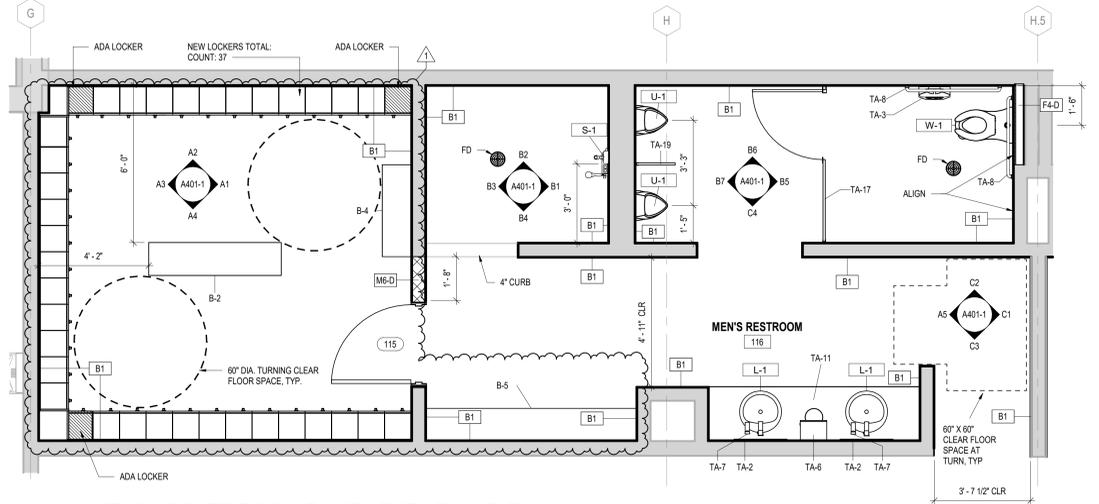
05 73 13 – Glazed Decorative Metal Railings

ADDED specification.

07 42 13.23 – Metal Composite Material Wall Panels

ADDED specification.

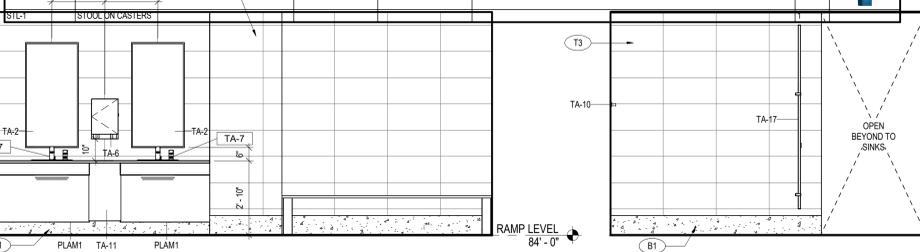
END OF NARRATIVE



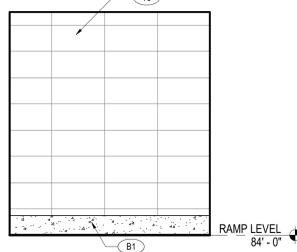
D1 MENS LOCKER ROOM RAMP LEVEL FLOOR PLAN
SCALE: 3/8" = 1'-0"

TAG	ACCESSORY	MANUFACTURER	MODEL	POWER REQUIREMENT	FINISH MATERIAL
TA-2	SILHOUETTE LIGHTED MIRROR - 24" X 48" LIGHTED LED MIRROR	ELECTRIC MIRROR	SIL3-24.00x48.00-LED-30K	YES, SEE ELECTRICAL DRAWINGS	
TA-3	TOILET TISSUE(ROLL) DISPENSER	OFICI		NO	STAINLESS STEEL
TA-4	SANITARY NAPKIN DISPOSAL	BOBRICK WASHROOM EQUIPMENT, INC.	B-254	NO	STAINLESS STEEL
TA-5	SURFACE MOUNTED CONVERTIBLE AUTOMATIC, UNIVERSAL ROLL TOWEL DISPENSER/WASTE RECEPTACLE	BOBRICK	B-3979	YES, SEE ELECTRICAL DRAWINGS	STAINLESS STEEL
TA-6	PAPER TOWEL DISPENSER	OFICI		NO	STAINLESS STEEL
TA-7	SENSOR ACTIVATED ELECTRONIC SOAP DISPENSER	SLOAN	ESD-500	YES, SEE ELECTRICAL DRAWINGS	
TA-8	36" X 42" GRAB BAR	KOHLER	K-11996-85	NO	BRUSHED STAINLESS STEEL
TA-9	SHOWER CURTAIN HOOD	BOBRICK	B-20748	NO	STAINLESS STEEL
TA-10	COAT HOOK (80" A.F.F.)	MOCKETT	CH53	NO	SATIN-FINISH STAINLESS STEEL
TA-11	UNDERCOUNTER PULL OUT TRASH RECEPTACLE	POLDER	1410-47	NO	SATIN-FINISH STAINLESS STEEL
TA-16A	BABY CHANGING STATION	KOALA KARE	KR112-01RE	NO	SEE SPECS
TA-16B	BABY CHANGING STATION	KOALA KARE	KR310-SSRE	NO	STAINLESS STEEL
TA-17	TOILET PARTITION - CEILING HUNG	BRADLEY CORP.	SERIES 600, CEILING HUNG, WITH OCCASIONAL FLOOR SUPPORT EVERY 3 STALLS	NO	STAINLESS STEEL DIAMOND FINISH
TA-19	URINAL PARTITION	SEE SPECS		NO	
TA-21	SS PURSE HOOK	SUGATSUNE GLOBAL	PXB-LIMDS-101	NO	SATIN NICKEL
TA-22	SURFACE MOUNTED HOOKS	PETER PEPPER	2086	NO	NATURAL ANODIZED ALUMINUM

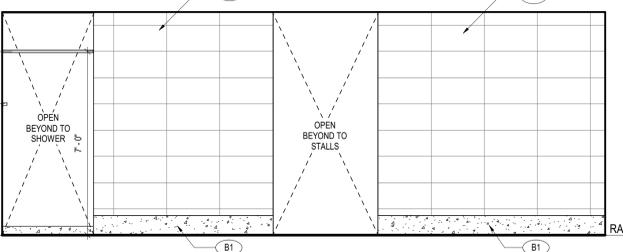
TAG	DESCRIPTION	MANUFACTURER	POWER REQUIREMENT	COMMENTS	COUNT	TYPE / USE
B-1	72" BENCH	GRID	NO	BENCH TOP: 1/2" THICK SOLID SURFACE WITH 1 1/2" DROP EDGE. PROVIDE 1/8" EASED EDGES ON BENCH SIDES. SUBSTRATE IS SOLID PLYWOOD ROUTED TO CONNECT THE 6" BASE PLATE. 0 LEG PEDESTAL LEGS: 1-1/2" W X 1/4" THICK POWDER COATED SILVER EXTRUDED STAINLESS STEEL	2	
B-2	60" BENCH	GRID	NO	BENCH TOP: 1/2" THICK SOLID SURFACE WITH 1 1/2" DROP EDGE. PROVIDE 1/8" EASED EDGES ON BENCH SIDES. SUBSTRATE IS SOLID PLYWOOD ROUTED TO CONNECT THE 6" BASE PLATE. 0 LEG PEDESTAL LEGS: 1-1/2" W X 1/4" THICK POWDER COATED SILVER EXTRUDED STAINLESS STEEL	2	
B-3	48" BENCH	GRID	NO	BENCH TOP: 1/2" THICK SOLID SURFACE WITH 1 1/2" DROP EDGE. PROVIDE 1/8" EASED EDGES ON BENCH SIDES. SUBSTRATE IS SOLID PLYWOOD ROUTED TO CONNECT THE 6" BASE PLATE. 0 LEG PEDESTAL LEGS: 1-1/2" W X 1/4" THICK POWDER COATED SILVER EXTRUDED STAINLESS STEEL	1	
B-4	42" BENCH	GRID	NO	BENCH TOP: 1/2" THICK SOLID SURFACE WITH 1 1/2" DROP EDGE. PROVIDE 1/8" EASED EDGES ON BENCH SIDES. SUBSTRATE IS SOLID PLYWOOD ROUTED TO CONNECT THE 6" BASE PLATE. 0 LEG PEDESTAL LEGS: 1-1/2" W X 1/4" THICK POWDER COATED SILVER EXTRUDED STAINLESS STEEL	1	
B-5	96" BENCH	GRID	NO	BENCH TOP: 1/2" THICK SOLID SURFACE WITH 1 1/2" DROP EDGE. PROVIDE 1/8" EASED EDGES ON BENCH SIDES. SUBSTRATE IS SOLID PLYWOOD ROUTED TO CONNECT THE 6" BASE PLATE. 0 LEG PEDESTAL LEGS: 1-1/2" W X 1/4" THICK POWDER COATED SILVER EXTRUDED STAINLESS STEEL	1	
CH-1	DESK CHAIR	GLOBAL FURNITURE GROUP	NO	STYLE: FACTOR; HIGH BACK, ARMLESS (ISSUAL), ARMLESS TO BE CONFORMED BY OWNER, ADJUSTABLE POLISHED ALUMINUM BASE, WEIGHT SENSING SYNCHRO TILT/MECHANSIM, STANDARD MESH BACK, STANDARD UPHOLSTERED SEAT. COLOR: TBD. CLOUD (C) IF APPLICABLE. DIMENSIONS: 28.5" W X 24" D X 41.5" H	3	
DISK-2	DESK FOR HEIGHT ADJUSTABLE BASE	GLOBAL FURNITURE GROUP	YES	DESK 72" X 30" POWER ADJUSTABLE HEIGHT RANGE 22.6" TO 48.6". WHITE HPL LAMINATE, 1 LEG BASE. SILVER POWDER COATED FINISH. CONFORM IF RETURN IS NEEDED PRIOR TO ORDERING	1	
L-1	12" W X 12" D X 72" H DOUBLE TIER METAL LOCKER WITH VENTED DOORS	ASI	NO	CONTINUOUS WHITE SLOPED TOP, ZEE BASE. LOCKS, LOCKER NUMBER, COLOR: WHITE #29	28	
L-2	12" W X 12" D X 72" H DOUBLE TIER METAL LOCKER WITH VENTED DOORS	ASI	NO	CONTINUOUS WHITE SLOPED TOP, ZEE BASE. LOCKS, LOCKER NUMBER, COLOR: SKY BLUE #31. REFER TO SPECIFICATION 10 51 13 FOR ADDITIONAL INFORMATION	40	



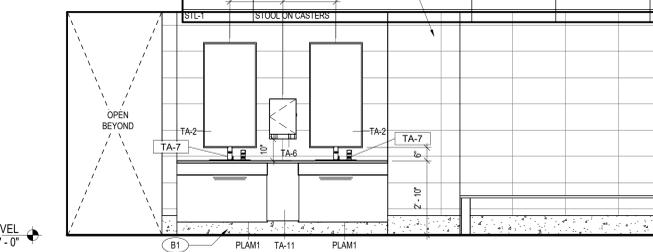
C3 MENS RESTROOM SOUTH ELEVATION
SCALE: 3/8" = 1'-0"



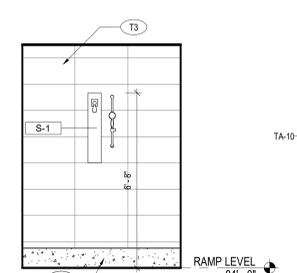
C1 MENS ENTRY EAST
SCALE: 3/8" = 1'-0"



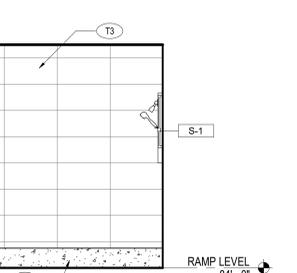
C2 MENS RESTROOM NORTH ELEVATION
SCALE: 3/8" = 1'-0"



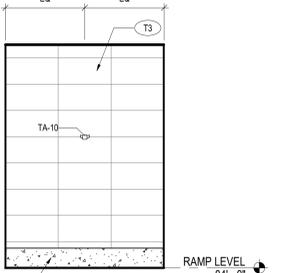
C4 MENS STALLS SOUTH ELEVATION
SCALE: 3/8" = 1'-0"



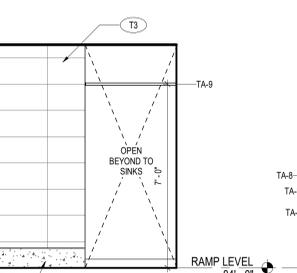
B1 MENS SHOWER EAST
SCALE: 3/8" = 1'-0"



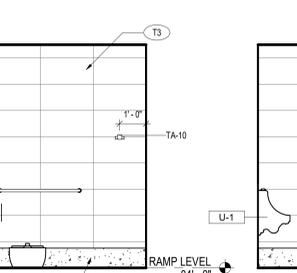
B2 MENS SHOWER NORTH
SCALE: 3/8" = 1'-0"



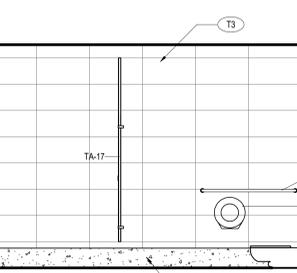
B3 MENS SHOWER WEST
SCALE: 3/8" = 1'-0"



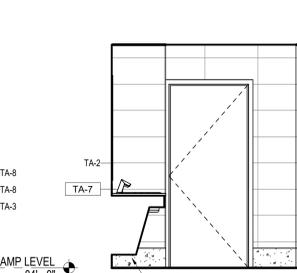
B4 MENS SHOWER SOUTH
SCALE: 3/8" = 1'-0"



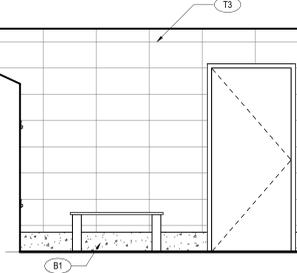
B5 MENS STALLS EAST
SCALE: 3/8" = 1'-0"



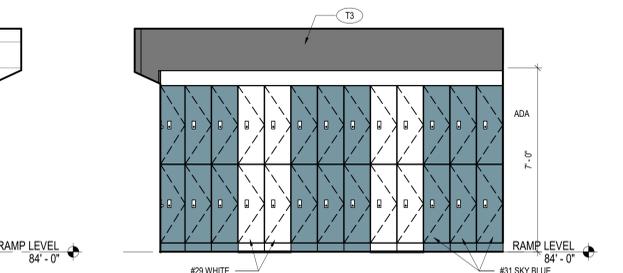
B6 MENS STALLS NORTH ELEVATION
SCALE: 3/8" = 1'-0"



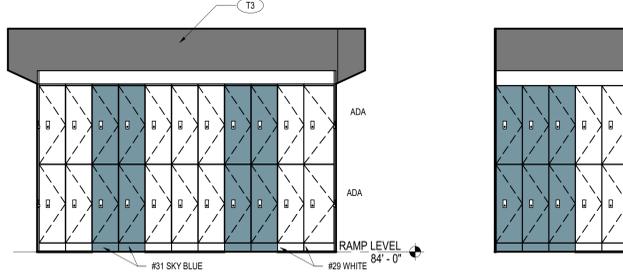
B7 MENS STALLS WEST ELEVATION
SCALE: 3/8" = 1'-0"



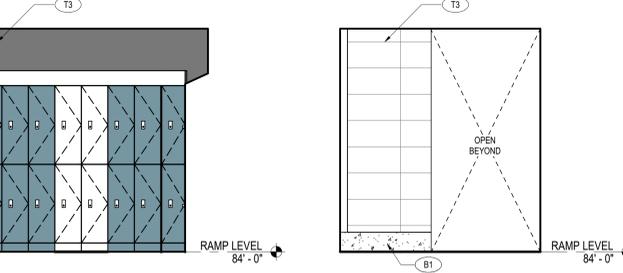
A1 MENS LOCKER EAST ELEVATION
SCALE: 3/8" = 1'-0"



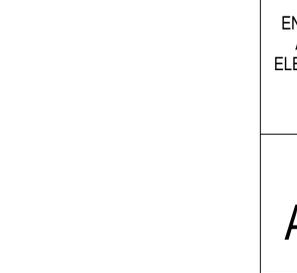
A2 MENS LOCKER TYPICAL ELEVATION
SCALE: 3/8" = 1'-0"



A3 MENS LOCKER WEST ELEVATION
SCALE: 3/8" = 1'-0"



A4 MENS LOCKER SOUTH ELEVATION
SCALE: 3/8" = 1'-0"



A5 MENS ENTRY WEST
SCALE: 3/8" = 1'-0"

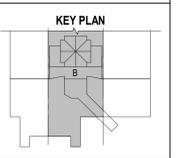
- GENERAL NOTES**
- DO NOT SCALE DIMENSIONS FROM DRAWINGS - THE CONTRACTOR MUST REQUEST NECESSARY DIMENSIONS NOT SHOWN ON THE DRAWINGS FROM THE ARCHITECT.
 - ALL DIMENSIONS ARE TO BE FIELD VERIFIED. IF ANY DEVIATIONS OR DISCREPANCIES OCCUR, CONTACT THE ARCHITECT FOR VERIFICATION PRIOR TO PROCEEDING WITH THE WORK.
 - THE CFMIF & PLYWOOD SURFACE SHALL BE PLUMB & FLAT WITHIN +1.18".
 - PLYWOOD SHALL EXTEND THE ENTIRETY OF THE VIDEO WALL SURFACE.
 - PROTECT THE TRANSITION STRIPS WHEN GRINDING TERRAZZO TO POLISH FINISH WITH PROTECTION TAPE.
 - ALL EXPOSED PRIMARY STEEL TO BE 2 HR FIRE RATED.
 - ADD IN WALL PRESSURE TREATED BLOCKING AT ALL ROBE HOOK ATTACHMENTS.
 - FOR RESTROOM FLOOR SLOPE, REFER TO CIVIL DRAWINGS.

RS&H
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Charlotte, NC 28203
Phone: 704-752-0510, Fax: 704-949-2672
www.rsandh.com
North Carolina License Nos. 50073 *
F-0493 * C-28



PROJECT TITLE:
ILM AIRPORT BOULEVARD AND PARKING IMPROVEMENTS - PHASE II

PROJECT ADDRESS:
1740 AIRPORT BLVD.
WILMINGTON, NC 28405



REVISIONS

NO.	DESCRIPTION	DATE
1	ADDENDUM #1	04/10/2025

DATE ISSUED: 03/14/2025
REVIEWED BY: SG
DRAWN BY: SS
DESIGNED BY: FG

PROJECT NUMBER:
1003-0070-004
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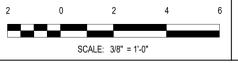
SEAL:

FOR REVIEW ONLY
NOT FOR CONSTRUCTION

SHEET TITLE:
RESTROOM ENLARGED PLANS AND INTERIOR ELEVATIONS - RAMP LEVEL

SHEET ID:
A401-1

PROJECT STATUS:
100% BID SET

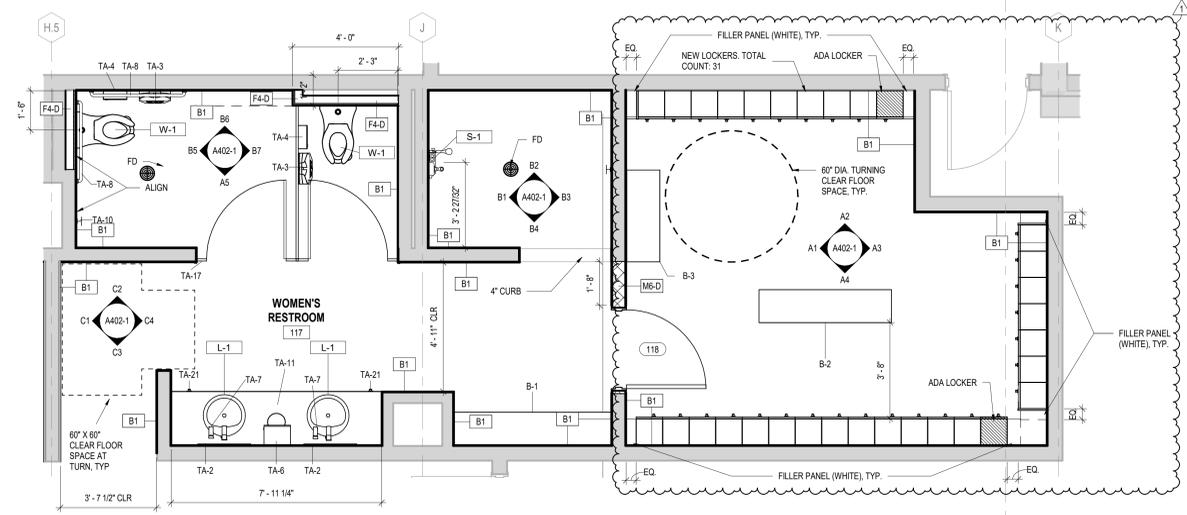


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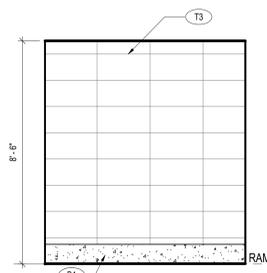
- GENERAL NOTES**
- DO NOT SCALE DIMENSIONS FROM DRAWINGS - THE CONTRACTOR MUST REQUIRE NECESSARY DIMENSIONS NOT SHOWN ON THE DRAWINGS FROM THE ARCHITECT.
 - ALL DIMENSIONS ARE TO BE FIELD VERIFIED. IF ANY DEVIATIONS OR DISCREPANCIES OCCUR, CONTACT THE ARCHITECT FOR VERIFICATION PRIOR TO PROCEEDING WITH THE WORK.
 - THE CMF & PLYWOOD SURFACE SHALL BE PLUMB & FLAT WITHIN +/- .18".
 - PLYWOOD SHALL EXTEND THE ENTIRETY OF THE VIDEO WALL SURFACE.
 - PROTECT THE TRANSITION STRIPS WHEN GRINDING TERRAZZO TO POLISH FINISH WITH PROTECTION TAPE.
 - ALL EXPOSED PRIMARY STEEL TO BE 2 HR FIRE RATED.
 - ADD IN WALL PRESSURE TREATED BLOCKING AT ALL ROBE HOOK ATTACHMENTS.
 - FOR RESTROOM FLOOR SLOPE, REFER TO CIVIL DRAWINGS.

TOILET ACCESSORY SCHEDULE

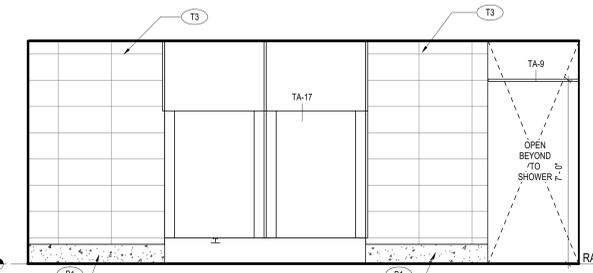
TAG	ACCESSORY	MANUFACTURER	MODEL	POWER REQUIREMENT	FINISH MATERIAL
TA-2	SILHOUETTE LIGHTED MIRROR - 24" X 48" LIGHTED LED MIRROR	ELECTRIC MIRROR	SILS-24.00x48.00-LHED-30K	YES, SEE ELECTRICAL DRAWINGS	
TA-3	TOILET TISSUE(ROLL) DISPENSER	OPCI		NO	
TA-4	SANITARY NAPKIN DISPOSAL	BOBRICK WASH-ROOM EQUIPMENT, INC.	B-254	NO	STAINLESS STEEL
TA-5	SURFACE MOUNTED CONVERTIBLE AUTOMATIC, UNIVERSAL ROLL TOWEL DISPENSER/WASTE RECEPTACLE	BOBRICK	B-3979	YES, SEE ELECTRICAL DRAWINGS	STAINLESS STEEL
TA-6	PAPER TOWEL DISPENSER	OPCI		NO	STAINLESS STEEL
TA-7	SENSOR ACTIVATED ELECTRONIC SOAP DISPENSER	SLOAN	ESD-500	YES, SEE ELECTRICAL DRAWINGS	
TA-8	36" X 42" GRAB BAR	KOHLER	K-11896-6S	NO	BRUSHED STAINLESS
TA-9	SHOWER CURTAIN ROD	KOHLER	B-20748	NO	STAINLESS STEEL
TA-10	COAT HOOK (60" A.F.F.)	MOCKETT	CH53	NO	SATIN-FINISH STAINLESS STEEL
TA-11	UNDERCOUNTER PULL OUT TRASH RECEPTACLE	POLDER	1410-47	NO	SATIN-FINISH STAINLESS STEEL
TA-16A	BABY CHANGING STATION	KOALA KARE	KB1221RE	NO	SEE SPECS
TA-16B	BABY CHANGING STATION	KOALA KARE	KB310-SSRE	NO	STAINLESS STEEL
TA-17	TOILET PARTITION - CEILING HUNG	BRADLEY CORP.	SERIES 800, CEILING HUNG, WITH OCCASIONAL FLOOR SUPPORT EVERY 3 STALLS	NO	STAINLESS STEEL, DIAMOND FINISH
TA-19	URINAL PARTITION	SEE SPECS		NO	
TA-21	SS PURSE HOOK	SUGATSUNE GLOBAL	PXB-UM05-101	NO	SATIN NICKEL
TA-22	SURFACE MOUNTED HOOKS	PETER PEPPER	Z086	NO	NATURAL ANODIZED ALUMINUM



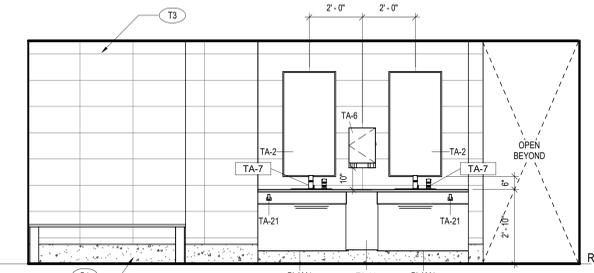
D1 WOMENS LOCKER ROOM RAMP LEVEL FLOOR PLAN
 SCALE: 3/8" = 1'-0"



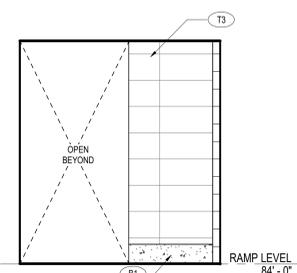
C1 WOMENS ENTRY WEST
 SCALE: 3/8" = 1'-0"



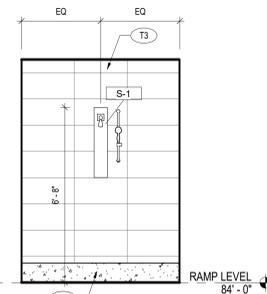
C2 WOMENS RESTROOM NORTH ELEVATION
 SCALE: 3/8" = 1'-0"



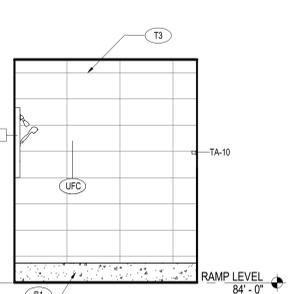
C3 WOMENS RESTROOM SOUTH ELEVATION
 SCALE: 3/8" = 1'-0"



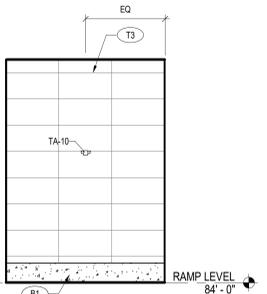
C4 WOMENS ENTRY EAST
 SCALE: 3/8" = 1'-0"



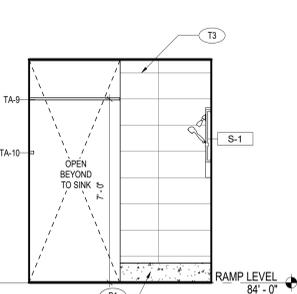
B1 WOMENS SHOWER WEST
 SCALE: 3/8" = 1'-0"



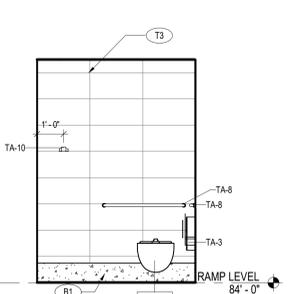
B2 WOMENS SHOWER NORTH
 SCALE: 3/8" = 1'-0"



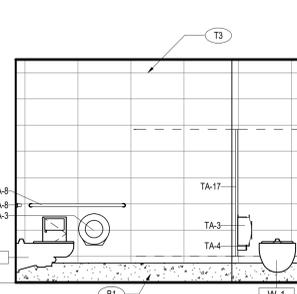
B3 WOMENS SHOWER EAST
 SCALE: 3/8" = 1'-0"



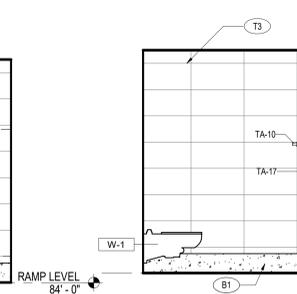
B4 WOMENS SHOWER SOUTH
 SCALE: 3/8" = 1'-0"



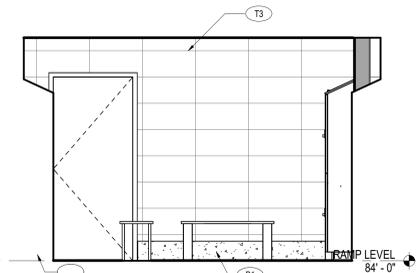
B5 WOMENS STALLS WEST
 SCALE: 3/8" = 1'-0"



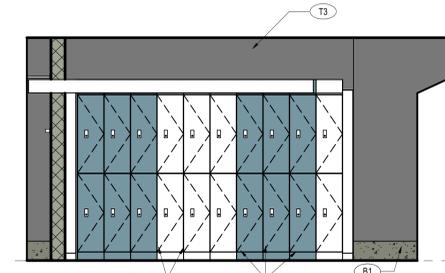
B6 WOMENS STALLS NORTH ELEV.
 SCALE: 3/8" = 1'-0"



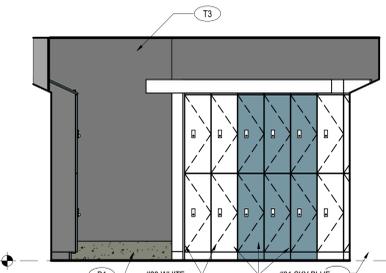
B7 WOMENS STALLS EAST ELEV.
 SCALE: 3/8" = 1'-0"



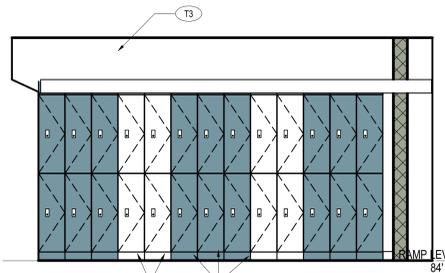
A1 WOMENS LOCKER WEST ELEV.
 SCALE: 3/8" = 1'-0"



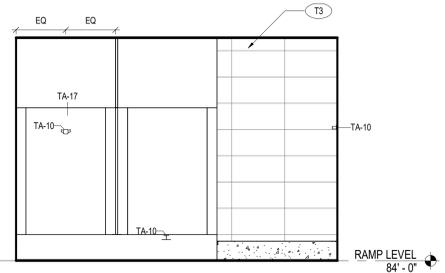
A2 WOMENS LOCKER NORTH ELEV.
 SCALE: 3/8" = 1'-0"



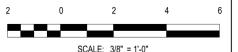
A3 WOMENS LOCKER EAST ELEV.
 SCALE: 3/8" = 1'-0"



A4 WOMENS LOCKER SOUTH ELEV.
 SCALE: 3/8" = 1'-0"

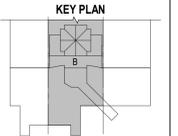


A5 WOMENS STALLS SOUTH ELEVATION
 SCALE: 3/8" = 1'-0"



PROJECT TITLE:
 ILM AIRPORT BOULEVARD AND
 PARKING IMPROVEMENTS - PHASE
 II

PROJECT ADDRESS:
 1740 AIRPORT BLVD.
 WILMINGTON, NC 28405



REVISIONS

NO.	DESCRIPTION	DATE
1	ADDENDUM #1	04/10/2025

DATE ISSUED: 03/14/2025
 REVIEWED BY: SG
 DRAWN BY: SS
 DESIGNED BY: FG
 PROJECT NUMBER:
 1003-0070-004
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SEAL:
 FOR REVIEW ONLY
 NOT FOR CONSTRUCTION

SHEET TITLE:
 RESTROOM
 ENLARGED PLANS
 AND INTERIOR
 ELEVATIONS - RAMP
 LEVEL

SHEET ID:
 A402-1

PROJECT STATUS:
 100% BID SET

100% Bid Set Submittal - Addendum 1
Date: 4-10-2025

Project: ILM Airport Boulevard – Parking Improvements Program
Phase 2 – Volume 2 **Alternate 1**

RS&H Project No.: 2003-0070-006

Revised Contract Documents. See the itemized list below.

Contract Drawings

A401-1 - RESTROOM ENLARGED PLANS AND INTERIOR ELEVATIONS - RAMP LEVEL

Specified color
Updated description
Modified notes

A402-1 - RESTROOM ENLARGED PLANS AND INTERIOR ELEVATIONS - RAMP LEVEL

Updated benches

END OF NARRATIVE

100% Bid Set Submittal - Addendum 1
Date: 4-10-2025

Project: ILM Airport Boulevard – Parking Improvements Program
Phase 2 – Volume 2 **Alternate 3**

RS&H Project No.: 2003-0070-006

Revised Contract Documents. See the itemized list below.

Contract Drawings

T108-3 – PARTIAL COMMUNICATIONS TICKET LEVEL PLAN – AREA B

ADDED CBP communications conduit.

ADDED CBP communications cabinet.

T702-3 – COMMUNICATIONS RISER DIAGRAMS

ADDED CBP communications conduit.

END OF NARRATIVE

100% Bid Set Submittal - Addendum 1
Date: 4-10-2025

Project: ILM Airport Boulevard – Parking Improvements Program
Phase 2 – Volume 2 **Alternate 4**

RS&H Project No.: 2003-0070-006

Revised Contract Documents. See the itemized list below.

Contract Drawings

P701-4 TICKET LEVEL MENS RESTROOM PLUMBING RISER DIAGRAMS

ADDED – Demo and New riser diagrams for DWV and Pressure Piping

P702-4 TICKET LEVEL MENS RESTROOM PLUMBING RISER DIAGRAMS

ADDED – Demo and New riser diagrams for DWV and Pressure Piping

T103-4 – PARTIAL COMMUNICATIONS RAMP LEVEL PLAN – AREA B

ADDED CBP communications conduit.

T108-4 – PARTIAL COMMUNICATIONS TICKET LEVEL PLAN – AREA B

ADDED CBP communications conduit.

ADDED CBP communications cabinet.

T401-4 – ENLARGED COMMUNICATIONS PLAN

ADDED CBP communications conduit.

TY001-4 – SECURITY GENERAL NOTES, SYMBOLS AND ABBREVIATIONS

UPDATED Security symbols legend.

TY108-4 – PARTIAL SECURITY TICKET LEVEL PLAN – AREA B

ADDED Intrusion detection system devices to Global Entry Office.

END OF NARRATIVE

DESIGN CRITERIA:

DESIGN PER: 2024 NORTH CAROLINA BUILDING CODE
DEAD LOADS: SELF-WEIGHT + ROOF ASSEMBLY TUNNEL, COLLATERAL MEP, OVERBURDEN, CANOPY COLLATERAL
LIVE LOADS: SLAB ON GRADE, TYPICAL FLOOR (ELEVATED LEVELS), MECHANICAL AND LIGHT STORAGE, STAIRS AND EGRESS, ROOF, SIDEWALK, TUNNEL TOP
WIND LOADS: ULTIMATE DESIGN WIND SPEED, NOMINAL DESIGN WIND SPEED, RISK CATEGORY, WIND EXPOSURE CATEGORY, INTERNAL PRESSURE COEFFICIENT, ENCLOSED BUILDING, CANOPY, COMPONENTS AND CLADDING WIND PRESSURES, HURRICANE-PRONE REGION
EARTHQUAKE DESIGN DATA: SEISMIC IMPORTANCE FACTORS, MAPPED SPECTRAL RESPONSE ACCELERATIONS, MAPPED SPECTRAL RESPONSE ACCELERATIONS, SPECTRAL RESPONSE COEFFICIENT, SPECTRAL RESPONSE COEFFICIENT, SITE CLASS, SEISMIC DESIGN CATEGORY, BASIC SEISMIC FORCE-RESISTING SYSTEMS
SNOW LOADS: GROUND SNOW LOAD, FLAT ROOF SNOW LOAD, BUILDING, CANOPY, SNOW EXPOSURE FACTOR, SNOW LOAD IMPORTANCE FACTOR, THERMAL FACTOR, BUILDING, CANOPY, DRIFT SURCHARGE LOADS, WIDTH OF SNOW DRIFT
RAIN INTENSITY: PRECIPITATION INTENSITY (15-MINUTE), PRECIPITATION INTENSITY (60-MINUTE)
FOUNDATION SYSTEM: SHALLOW FOUNDATION SYSTEM, ALLOWABLE BEARING PRESSURE, SLAB ON GRADE SUBGRADE MODULUS, DEEP FOUNDATION SYSTEM

MATERIAL PROPERTIES:

CONCRETE: NORMAL WEIGHT (UNO PER ACI 318-19), SLAB ON DECK (INTERIOR), SLAB ON DECK (EXPOSED), BELOW GRADE CONCRETE, CONCRETE COLUMNS, ALL OTHER CONCRETE, PRECAST CONCRETE
CONCRETE REINFORCING STEEL: REINFORCEMENT BARS, WELDABLE REINFORCEMENT BARS
WELDED WIRE FABRIC: ASTM A1064
STRUCTURAL STEEL (PER ACI 360-16): WIDE FLANGE SHAPES, HSS RECTANGULAR, HSS ROUND, STEEL PIPES, CHANNELS, PLATES, ANGLES, BOLTS, ANCHOR BOLTS, ALL OTHER STEEL
WELD ELECTRODE: WELDS (PER AWS D1.1), REINFORCEMENT BAR WELDS (PER AWS D1.4)
HEADED SHEAR CONNECTORS: 3/4" DIA. HSA IN CONFORMANCE WITH AWS D1.1

GENERAL NOTES:

- 1. THE STRUCTURAL NOTES MUST GOVERN IN MATTERS COVERED ON THE STRUCTURAL DRAWINGS. SEE PROJECT SPECIFICATION AND OTHER DRAWINGS FOR FURTHER REQUIREMENTS.
2. THE DRAWINGS REPRESENT THE FINISHED STRUCTURE. UNLESS OTHERWISE INDICATED, THEY DO NOT REPRESENT THE METHOD OF CONSTRUCTION.
3. THE CONTRACTOR MUST TAKE ALL MEASURES NECESSARY TO PROTECT THE STRUCTURE AND ANY PERSONNEL DURING CONSTRUCTION. SUCH MEASURES SHOULD INCLUDE, BUT NOT BE LIMITED TO, TEMPORARY BRACING AND SHORING OF DEAD LOADS, CONSTRUCTION LOADS, WIND LOADS, ETC.
4. FOR TYPICAL DETAILS SHOWN BUT NOT REFERRED TO EXCEPT HEREIN, CONFORM TO ALL OF THE REQUIREMENTS OF THESE DETAILS TO THE SAME EXTENT AS IF REFERRED TO BY DETAIL NUMBER.
5. IF FOOTING ELEVATIONS SHOWN OCCUR IN A DISTURBED, UNSTABLE OR UNSUITABLE SOIL, THE ENGINEER MUST BE NOTIFIED.
6. CONTRACTOR MUST VERIFY ALL EXISTING CONDITIONS OF EXISTING SITE THAT ARE AFFECTED BY NEW WORK BEFORE PROCEEDING WITH FABRICATION AND CONSTRUCTION.
7. ALL STRUCTURAL OPENINGS AROUND OR AFFECTED BY ARCHITECTURAL, MECHANICAL, ELECTRICAL AND PLUMBING EQUIPMENT MUST BE VERIFIED WITH EQUIPMENT PURCHASED BEFORE PROCEEDING WITH STRUCTURAL WORK AFFECTED. SEE ARCHITECTURAL, MECHANICAL, ELECTRICAL AND PLUMBING DRAWINGS FOR OPENINGS, SLEEVES, ETC. NOT SHOWN ON THE STRUCTURAL DRAWINGS.
8. EXISTING CONDITIONS ARE IN ACCORDANCE WITH THE NEW HANOVER COUNTY AIRPORT- NEW TERMINAL COMPLEX RECORD DRAWINGS DATED NOVEMBER 10, 1986.

DEFERRED SUBMITTALS:

- 1. DEFERRED SUBMITTALS: A. COLD-FORMED METAL FRAMING (SPECIFICATION 054000), B. STRUCTURAL CAST STEEL COMPONENTS (SPECIFICATION 051210), C. AUGER CAST GROUT PILES (SPECIFICATION 051916), D. STEEL CONNECTIONS (SPECIFICATION 051200), E. STAIR STEEL FRAMING (SPECIFICATION 055113), F. TEMPORARY SHORING, G. PRECAST STRUCTURAL CONCRETE (SPECIFICATION 034100), H. EXCAVATION SUPPORT (SPECIFICATION 315000), I. HELICAL PILE AND ANCHOR (SPECIFICATION 316113), J. SEGMENTAL RETAINING WALL (SPECIFICATION 322223)
2. SUBMITTAL DOCUMENTS FOR DEFERRED SUBMITTALS MUST BE SUBMITTED TO THE ARCHITECT OR ENGINEER OF RECORD WHO MUST REVIEW THEM AND FORWARD THEM TO THE BUILDING OFFICIAL WITH A NOTATION INDICATING THAT THE DEFERRED SUBMITTAL DOCUMENTS HAVE BEEN REVIEWED AND THAT THEY HAVE BEEN FOUND TO BE IN GENERAL CONFORMANCE WITH THE SPECIFICATIONS.
3. THE DEFERRED SUBMITTAL ITEMS MUST NOT BE FABRICATED OR INSTALLED UNTIL THEIR DESIGN AND SUBMITTAL DOCUMENTS HAVE BEEN APPROVED BY THE BUILDING OFFICIAL.

STRUCTURAL STEEL:

- 1. STRUCTURAL STEEL MUST CONFORM TO THE CURRENT EDITION OF THE AISC STEEL CONSTRUCTION MANUAL (FIFTEENTH EDITION) INCLUDING AISC 360-16 (SPECIFICATION FOR STRUCTURAL STEEL BUILDINGS) AND AISC 303 (CODE OF STANDARD PRACTICE FOR STRUCTURAL STEEL BUILDINGS AND BRIDGES).
2. QUALITY CONTROL (QC) MUST BE PERFORMED BY THE CONTRACTOR (ERECTOR/FABRICATOR) IN ACCORDANCE WITH THE PROVISIONS OF AISC 360-16 CHAPTER N AND ALL APPLICABLE REFERENCED STANDARDS. ALL WELDING INSPECTIONS PERFORMED BY THE CONTRACTOR MUST BE PERFORMED BY A CERTIFIED WELDING INSPECTOR (AWS CWI/C1). CONTRACTOR MUST KEEP CURRENT AND HAVE AVAILABLE FOR REVIEW ALL DOCUMENTATION LISTED IN AISC CHAPTER N, SECTION N3 AS WELL AS ALL DOCUMENTATION REQUIRED FOR INDIVIDUAL INSPECTION TASKS OUTLINED IN AISC 360 CHAPTER N.
3. ALL WELDS MUST BE PERFORMED IN ACCORDANCE WITH AISC D1.1 (LATEST EDITION). ALL WELDS MUST BE 3/16" MINIMUM FILLET WELDS UNO OR AS REQUIRED BY AISC.
4. FABRICATOR MUST SUBMIT SHOP DRAWINGS TO STRUCTURAL ENGINEER FOR REVIEW AND APPROVAL PRIOR TO THE START OF FABRICATION. ALL STRUCTURAL STEEL MUST BE INSTALLED IN ACCORDANCE WITH APPROVED SHOP DRAWINGS.
5. ALL SHOP CONNECTIONS MUST BE WELDED. ALL FIELD WELDING MUST BE SHOWN ON THE SHOP DRAWINGS.
6. BOLTS AND BOLTED CONNECTIONS MUST CONFORM TO THE REQUIREMENTS OF THE LATEST EDITION OF THE SPECIFICATION FOR STRUCTURAL JOINTS USING HIGH-STRENGTH BOLTS, AS APPROVED BY THE RESEARCH COUNCIL ON STRUCTURAL CONNECTIONS (RCS).
7. PRIOR TO PERFORMING ANY PRETENSIONED BOLT INSTALLATION INCLUDING SLIP CRITICAL INSTALLATIONS, PRE-INSTALLATION VERIFICATION TESTING MUST BE CONDUCTED IN ACCORDANCE WITH AISC 360 CHAPTER N AND THE RCS SPECIFICATION FOR STRUCTURAL JOINTS USING HIGH-STRENGTH BOLTS.
8. BOLTED CONNECTION DENOTED AS "SC" OR "SLIP CRITICAL" ON PLAN OR IN SECTIONS/DETAILS MUST BE INSTALLED TO A SLIP CRITICAL CONDITION WITH A CLASS A FAYING SURFACE UNO. FAYING SURFACE MUST BE PREPARED IN ACCORDANCE WITH THE RCS SPECIFICATION FOR STRUCTURAL JOINTS USING HIGH-STRENGTH BOLTS.
9. ALL BOLTS MUST BE ASTM A325 INSTALLED TO SNUG-TIGHT IN BEARING TYPE CONDITION WITH THREADS ALLOWED ACROSS THE SHEAR PLANE UNO.
10. ACCEPTABLE METHODS OF PRETENSIONING WILL EMPLOY THE USE OF DIRECT TENSION INDICATORS (DTI), TWIST-OFF BOLTS OR TURN UP NUT WITH MATCH MARKING. CALIBRATED WRENCH AND TURN-OF-NUT WITHOUT MATCH MARKING ARE NOT ALLOWED.
11. EXCEPT WHERE SPECIFICALLY NOTED, CONNECTION DETAILS ON THE DRAWINGS ARE CONSIDERED COMPLETELY DESIGNED AND MUST NOT BE MODIFIED WITHOUT SPECIFIC WRITTEN APPROVAL FROM THE ENGINEER.
12. WHERE CONNECTION DESIGN IS NOT PROVIDED IN THE DRAWINGS AND SHEAR FORCES ARE GIVEN ON THE DRAWINGS, PLATE SIZES, ANGLE SIZES, NUMBER AND SIZE OF BOLTS AND BOLTS FOR CONNECTIONS MUST BE DESIGNED BY THE CONTRACTOR IN ACCORDANCE WITH THE REQUIREMENTS OF PART 10 OF THE FIFTEENTH EDITION OF THE AISC MANUAL FOR THE SHEAR FORCES SHOWN ON THE DRAWINGS.
13. NO SHOP OR FIELD SPLICES WILL BE ALLOWED IN BEAMS, GIRDS OR COLUMNS EXCEPT WHERE SHOWN ON THE STRUCTURAL DRAWINGS.
14. NO ADDITIONAL HOLES FOR BOLTING OF TEMPORARY BRACING, ETC. DURING ERECTION WILL BE ALLOWED IN ANY STRUCTURAL STEEL MEMBER, WHERE TEMPORARY BOLT CONNECTIONS ARE REQUIRED FOR STABILITY OF THE STEEL FRAME DURING ERECTION, USE NELSON STUD BOLTS IN LEU OF PUNCHED OR DRILLED HOLES.
15. ALL STRUCTURAL STEEL MEMBERS, ANGLES, BARS, ANCHORS, ANCHOR BOLTS, ETC. EXPOSED TO WEATHER MUST BE HOT DIPPED GALVANIZED AFTER FABRICATION.
16. ALL TUBE STEEL MEMBERS TO REMAIN WITH AN OPEN END AFTER INSTALLATION SHALL BE CAPPED WITH A PLATE OF EQUAL THICKNESS (MIN) OF THE TUBE WALL AND FULLY WELDED AND GROUND SMOOTH.
17. VISIBLE STRUCTURAL STEEL AND COMPONENTS LOCATED IN PUBLIC AREAS SHALL BE CLASSIFIED AS ARCHITECTURAL EXPOSED STRUCTURAL STEEL (AESS) AS DEFINED BY CHAPTER 10 OF THE 2016 AISC CODE OF STANDARD PRACTICE (CSP).
A. AESS CATEGORIES (SEE DRAWINGS FOR LOCATIONS, INDICATED AS AESS1, AESS2, AESS3, AESS4, AESS5, AESS6, AESS7, AESS8, AESS9, AESS10, AESS11, AESS12, AESS13, AESS14, AESS15, AESS16, AESS17, AESS18, AESS19, AESS20, AESS21, AESS22, AESS23, AESS24, AESS25, AESS26, AESS27, AESS28, AESS29, AESS30, AESS31, AESS32, AESS33, AESS34, AESS35, AESS36, AESS37, AESS38, AESS39, AESS40, AESS41, AESS42, AESS43, AESS44, AESS45, AESS46, AESS47, AESS48, AESS49, AESS50, AESS51, AESS52, AESS53, AESS54, AESS55, AESS56, AESS57, AESS58, AESS59, AESS60, AESS61, AESS62, AESS63, AESS64, AESS65, AESS66, AESS67, AESS68, AESS69, AESS70, AESS71, AESS72, AESS73, AESS74, AESS75, AESS76, AESS77, AESS78, AESS79, AESS80, AESS81, AESS82, AESS83, AESS84, AESS85, AESS86, AESS87, AESS88, AESS89, AESS90, AESS91, AESS92, AESS93, AESS94, AESS95, AESS96, AESS97, AESS98, AESS99, AESS100)
B. SPECIFIC SURFACE TREATMENT REQUIREMENTS FOR EACH CATEGORY SHALL BE PER THE AESS CATEGORY MATRIX, TABLE 10.1 OF THE 2016 AISC COSP.
C. FOR AESS 1 COMPONENTS INDICATED HEREIN, THE FIRST ITEM COMPLETED DURING CONSTRUCTION SHALL BE USED TO DETERMINE ACCEPTABILITY. DEFICIENCIES SHALL BE CORRECTED AT NO COST TO THE OWNER PRIOR TO CONTINUING CONSTRUCTION.
18. ANGLE FRAME MEMBERS AROUND TRENCHES, PITS, OPENINGS, ETC. MUST BE MITERED, WELDED AND GROUND SMOOTH.
19. STRUCTURAL GROUT FOR STEEL COLUMNS MUST BE A NON-SHRINKAGE NON-EXPANSIVE, NON-METALLIC, GROUT WITH A 28-DAY COMPRESSIVE STRENGTH OF 8,000 PSI (WHEN TESTED) IN ACCORDANCE WITH ASTM C109.
20. STEEL ERECTOR MUST HOLD CURRENT CERTIFICATION AS AISC CERTIFIED ERECTOR (CSEA, CSE, OR ACSE).
21. STEEL FABRICATOR MUST HOLD CURRENT CERTIFICATION AS AISC CERTIFIED FABRICATOR (BU- CERTIFIED BUILDING FABRICATOR).

CONCRETE AND REINFORCING STEEL:

- 1. ALL CONCRETE MUST BE IN COMPLIANCE WITH THE BUILDING CODE REQUIREMENTS FOR STRUCTURAL CONCRETE ACI 318-19.
2. UNLESS OTHERWISE SHOWN ON DRAWINGS, MINIMUM COVER FOR REINFORCING SHALL BE PER CONCRETE COVER TABLE 19010.1.
3. ALL REINFORCING MUST BE HELD SECURELY IN POSITION WITH STANDARD ACCESSORIES IN CONFORMANCE WITH THE CURRENT EDITIONS OF THE CRSI MANUAL OF STANDARD PRACTICE DURING THE PLACING OF THE CONCRETE.
4. PROVIDE CORNER BARS AT ALL BEAM AND WALL INTERSECTIONS. CORNER BARS MUST BE THE SAME SIZE AS THE LARGER INTERSECTING BARS.
5. ALL GRADE BEAM AND WALL STEEL MUST BE CONTINUOUS WHERE POSSIBLE. TOP BARS MUST BE SPLICED AT THE CENTER OF THE SPAN. BOTTOM BARS OVER SUPPORTS, AND OTHER HORIZONTAL AND TEMPERATURE BARS AS REQUIRED.
6. SPLICES IN REINFORCING, WHERE PERMITTED, MUST BE AS FOLLOWS UNLESS OTHERWISE NOTED: REINFORCING STEEL: SEE DETAIL 85011, WELDED WIRE FABRIC: WIRE SPACING PLUS 2"
7. SEE ARCHITECTURAL, MECHANICAL, PLUMBING, FIRE PROTECTION AND ELECTRICAL PLANS FOR CAST-IN-PLACE BOLTS, INSERTS, ANCHORS, ETC AND FOR ALL SLAB LEAVE-OUTS, SLOPES, DEPRESSIONS, SLEEVES, ETC.
8. WELDED REINFORCEMENTS MUST CONFORM TO AWS D1.4/D1.4M.
9. ALL HOOKS IN REINFORCING BARS MUST BE AN ACI STANDARD HOOK, UNLESS OTHERWISE NOTED.
10. ALL EXPOSED EDGES OF CONCRETE MUST BE CHAMFERED 3/4", UNLESS OTHERWISE NOTED.
11. PROVIDE 1/2" PREMOULDED EXPANSION JOINT MATERIAL, WHERE SLAB ON GRADE IS POURED AGAINST GRADE BEAMS OR BARS, UNLESS OTHERWISE SHOWN OR NOTED.
12. ALL CONCRETE MUST BE DESIGNED BY AN APPROVED LABORATORY, AND THE DESIGN MIX MUST BE SUBMITTED TO THE ARCHITECT/ENGINEER FOR REVIEW, AND APPROVAL OBTAINED PRIOR TO USE.
13. NO PIPES OR DUCTS MUST BE PLACED IN STRUCTURAL CONCRETE UNLESS SPECIFICALLY DETAILED, SEE ARCHITECTURAL AND MECHANICAL DRAWINGS FOR LOCATION OF SLEEVES, MOULDS, FLOOR HINGES, ETC TO BE CAST INTO THE CONCRETE.
14. PROVIDE SUPPLEMENTAL REINFORCEMENT AT ALL SLAB-ON-GRADE REENTRANT CORNERS. SEE DETAIL 75011.

METAL ROOF DECK (TYPE: R-1):

- 1. METAL ROOF DECK MUST BE: A. 1.5" TYPE B 18 GAUGE (Fy = 50 KSI) BY VULCRRAFT OR APPROVED EQUAL.
2. DECK MUST BE INSTALLED AND ATTACHED TO THE SUPPORTING STEEL AS RECOMMENDED BY DECK MANUFACTURER AND AS FOLLOWS: A. 1.5" TYPE B 18 GAUGE: a. DECK MUST BE CONTINUOUS OVER A MINIMUM OF THREE SPANS. b. ATTACHMENT: - SUPPORTS: 3/8" FASTENER LAYOUT USING HILTI KEM-19 - SIDE LAPS: (4) HILTI S-SLC 02 M HWH SIDELAP CONNECTOR EVENLY SPACED PER SPAN c. AT ALL DECK PERIMETERS SUCH AS ROOF EDGES AND AROUND DECK OPENINGS WHERE SUPPORT RUNS PARALLEL TO FLUTE, ATTACH FLUTE AT 9" OC MAXIMUM WITH HILTI S-SLC 02 M HWH SIDELAP CONNECTOR. d. CONNECT ALTERNATE FLUTES AT INTERMEDIATE DECK SUPPORT POINTS (UNO).
3. UNLESS OTHERWISE NOTED, SEE TYPICAL DETAIL 150202 FOR EDGE OF ROOF DECK CONDITIONS.
4. ROOF DECK MUST BE GALVANIZED (G90).

METAL FLOOR DECK:

- 1. CONCRETE OVER METAL DECK TYPE SCHEDULE: A. FLOOR SLAB OVERALL NOMINAL THICKNESS: a. F-1: 5-1/2" FROM TOP OF CONCRETE TO BOTTOM OF METAL DECK b. F-2: 6" FROM TOP OF CONCRETE TO BOTTOM OF METAL DECK c. F-3: 12" FROM TOP OF CONCRETE TO BOTTOM OF METAL DECK
B. FLOOR DECK (OR APPROVED EQUAL): a. F-1: 2" TYPE U1 20 GAUGE (Fy = 50 KSI) MIN BY VULCRRAFT COMPOSITE METAL DECK b. F-2: 2" TYPE U1 20 GAUGE (Fy = 50 KSI) MIN BY VULCRRAFT COMPOSITE METAL DECK c. F-3: 2" TYPE C2 20 GAUGE (Fy = 50 KSI) MIN BY VULCRRAFT METAL FORM DECK
C. FLOOR SLAB REINFORCEMENT: a. F-1: WWF 0X6-W2 90X2.8, MID-HEIGHT OF CONCRETE ABOVE b. F-2: #3 BARS @ 18" O.C. MAX. EA. WAY, MID-HEIGHT OF CONCRETE ABOVE c. F-3: #6 BARS @ 24" O.C. MAX. EA. WAY, TOP & BOTTOM EXTERIOR BARS SHALL BE PARALLEL WITH DECK SPAN DIRECTION
D. CONCRETE TYPE: a. F-1: LIGHT WEIGHT (115 PCF) b. F-2: NORMAL WEIGHT (EXPOSED) c. F-3: NORMAL WEIGHT
2. DECK MUST BE WELDED TO SUPPORTING STEEL PER MANUFACTURER'S RECOMMENDATIONS AND AS FOLLOWS: A. DECK MUST BE CONTINUOUS OVER THREE OR MORE SPANS EXCEPT WHERE SINGLE SPANS ARE REQUIRED BY FRAMING LAYOUT.
3. METAL FLOOR DECK MUST BE ATTACHED TO SUPPORTING STRUCTURE IN A 3/64" FASTENER LAYOUT USING 5/8" PUDDLE WELDS.
C. SIDELAP FASTENERS MUST BE (3) WELDED EVENLY SPACED (UNO).
D. AT ALL DECK PERIMETERS SUCH AS FLOOR EDGES AND AROUND DECK OPENINGS WHERE SUPPORT RUNS PARALLEL TO FLUTE, WELD FLUTE AT 9" OC MAX.
E. AT ALL DECK PERIMETERS SUCH AS FLOOR EDGES AND AROUND DECK OPENINGS WHERE SUPPORT RUNS PERPENDICULAR TO FLUTE, EACH FLUTE WITH 5/8" PUDDLE WELDS.
F. CONNECT ALTERNATE FLUTES AT INTERMEDIATE DECK SUPPORT POINTS.
3. PLACE CONCRETE EVENLY OVER THE AREA TO BE COVERED SO THAT EXCESSIVE PILING UP OF CONCRETE DOES NOT OVERSTRESS THE STEEL DECK.
4. UNLESS OTHERWISE NOTED, SEE TYPICAL DETAIL 150202 FOR EDGE OF FLOOR SLAB CONDITIONS.
5. FLOOR DECK MUST BE GALVANIZED (G90).

PRECAST CONCRETE NOTES:

- 1. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE PERFORMANCE TYPE DESIGN OF THE PRECAST STRUCTURE. PRECAST CONCRETE MINIMUM DESIGN STRENGTH SHALL BE AS NOTED. AT PRECASTER'S OPTION, HIGHER STRENGTH CONCRETE MAY BE USED.
2. PRECAST CONCRETE SHALL COMPLY WITH PCI MANUAL FOR QUALITY CONTROL FOR PLANTS AND PRODUCTION OF STRUCTURAL PRECAST CONCRETE PRODUCTS (MNL-116) LATEST EDITION AND ACI-318-19.
3. PRECAST CONCRETE MEMBERS STRUCTURAL DESIGN SHALL BE IN COMPLIANCE WITH PCI DESIGN FOR FIRE RESISTANCE OF PRECAST CONCRETE (MNL-124) LATEST EDITION, THE ACI 318-19 AND LOCAL BUILDING CODE (REFERENCE G10).
4. THE DELEGATED ENGINEER RESPONSIBLE FOR THE STRUCTURAL DESIGN OF THE PRECAST CONCRETE MEMBERS SHALL ALSO BE RESPONSIBLE FOR THE PREPARATION OF THE SHOP DRAWINGS, SHORING AND ERECTION DRAWINGS, AND FOR THE MANUFACTURING OF THESE STRUCTURAL MEMBERS. A. DELEGATED ENGINEER SHALL VERIFY THE ERECTION OF THE STRUCTURE IS INSTALLED AND ERECTED IN ACCORDANCE WITH THEIR DESIGN INTENT.
5. PRECAST CONCRETE MEMBERS SHALL BE CAMBERED AS REQUIRED TO MINIMIZE DEFLECTIONS DUE TO PERMANENT SERVICE LOAD CONDITIONS.
6. PRECAST CONCRETE MOMENT FRAMES AND SHEAR WALLS SHALL REMAIN AS SHOWN ON PLAN. IF DELEGATED ENGINEER'S ANALYSIS DETERMINES INDICATION TO THE LATERAL RESISTING COMPONENTS IS REQUIRED, NOTIFY EOR FOR REVIEW AND APPROVAL.
7. ALL PENETRATIONS SHALL BE SHOWN ON THE SHOP DRAWINGS, SEE ARCHITECTURAL, MECHANICAL, ELECTRICAL, PLUMBING, AND FIRE PROTECTION DRAWINGS FOR LOCATION OF SLEEVES OR OPENINGS REQUIRED IN PRECAST CONCRETE MEMBERS. ADDITIONAL PENETRATIONS ARE NOT PERMITTED WITHOUT PRIOR WRITTEN APPROVAL OF THE DELEGATED ENGINEER AND EOR.
8. PROVIDE OPENING REINFORCEMENT IN ACCORDANCE WITH ACI-318-19.
9. ALL STEEL EMBEDS, INSERTS, AND COIL RODS SHALL BE GALVANIZED.
10. STEEL ERECTOR MUST HOLD CURRENT CERTIFICATION AS AISC CERTIFIED FABRICATOR (BU- CERTIFIED BUILDING FABRICATOR).

MASONRY:

- 1. ALL MASONRY WORK MUST CONFORM TO BUILDING CODE REQUIREMENTS FOR MASONRY STRUCTURES (TMS 402/ACI 530/ASCE 5) AND SPECIFICATIONS FOR MASONRY STRUCTURES (TMS 602/ACI 530.1/ASCE 6).
2. CONCRETE MASONRY UNITS: NET AREA COMPRESSIVE STRENGTH OF CONCRETE MASONRY: f'm = 2,000 PSI, NET AREA COMPRESSIVE STRENGTH OF CMU (ASTM C90): f'cmu = 2,000 PSI, MORTAR PER ASTM C270: TYPE M OR S, GROUT PER ASTM C479: f'g = 3,000 PSI, GROUTED UNIT DENSITY: Au = 125 PCF (MAX)
3. MORTAR MUST CONFORM TO ASTM C270 TYPE S TYPICAL WITH TYPE M USED BELOW GRADE (UNO).
4. GROUT SOLID ALL CELLS WITH REINFORCING OR EMBEDDED BOLTS.
5. REINFORCING STEEL MUST CONFORM TO ASTM A615, GRADE 60. SEE SCHEDULE FOR LAP SPLICE LENGTHS.
6. METAL ANCHORS AND TIES MUST BE OF CORROSION RESISTANT METAL HOT DIPPED GALVANIZED.
7. JOINT REINFORCING MUST BE ASTM A153, CLASS B, HOT-DIP GALVANIZED LADDER TYPE WITH 9-GAGE (W1.7) DEFORMED LONGITUDINAL WIRES AND SMOOTH CROSS WIRES CONFORMING TO ASTM A661. SPACE AT 16" O.C. VERTICAL. EMBED LONGITUDINAL WIRES IN MORTAR WITH A MINIMUM COVER OF 3/8" WHEN EXPOSED TO WEATHER OR EARTH AND 1/2" WHEN NOT EXPOSED TO WEATHER OR EARTH.
8. CONCRETE MASONRY BOND BEAMS MUST BE VERTICALLY SPACED AT 8'-0" ON CENTER MAXIMUM AND MUST BE PROVIDED AT ALL FLOOR LINES (INCLUDING INTERMEDIATE LANDINGS), ROOF LINES, TOP OF WALLS, TOP OF PARAPETS, TOP AND BOTTOM EDGE OF OPENINGS (EXTENDING 2'-0" PAST OPENING IN EA DIRECTION). BOND BEAMS MUST BE CONTINUOUS UNO. PROVIDE (2) #6 BARS IN 8" BOND BEAMS AND PROVIDE (2) #6 BARS IN 12" BOND BEAMS.
9. CONTINUE BOND BEAM REINFORCING THROUGH CONSTRUCTION JOINTS, CONTROL JOINTS AND AROUND CORNERS UNLESS NOTED OTHERWISE.
10. UNLESS OTHERWISE NOTED, ALL CMU WALLS MUST BE VERTICALLY REINFORCED AT EACH CORNER, CELLS ADJACENT TO EACH CORNER, AND EACH SIDE OF ALL OPENINGS AND RECESSES. A. MASONRY WALL - 8" #6 BARS @ 24" O.C. MAX. CENTERED, FULLY GROUTED (UNO)
11. PROVIDE TEMPORARY BRACING FOR MASONRY WALLS UNTIL THEY ARE CONSTRUCTED TO THEIR FINAL DESIGN CONDITION.
12. PROVIDE MASONRY CONTROL JOINTS AT 25'-0" C. MAX. SEE SPECS FOR JOINT INFORMATION.
13. CONCRETE MASONRY MUST BE INSTALLED IN RUNNING BOND PATTERN WITH A FULL MORTAR BED.

EARTHWORK NOTES:

- SITE PREPARATION: 1. COMPLETELY REMOVE ANY EXISTING STRUCTURES AND SURFACE PAVEMENT INCLUDING UNDERGROUND UTILITIES AND OLD FOUNDATIONS WHERE THEY OCCUR WITHIN THE FOOTPRINT OF THE PROPOSED NEW STRUCTURE.
A. FOLLOWING DEMOLITION OF EXISTING STRUCTURES, REMOVE OR PLUG EXISTING UTILITIES THAT ARE TO BE PERMANENTLY ABANDONED.
B. AREAS EXCAVATED TO REMOVE BURIED STRUCTURES SHALL BE BACKFILLED AND COMPACTED ACCORDINGLY.
2. CLEARING AND STRIPPING MUST CONSIST OF REMOVING TOPSOIL, VEGETATION, DEMOLITION DEBRIS, AND OTHER DELIVERABLE MATERIAL. IN THEIR ENTIRETY FROM THE PROPOSED FOUNDATION FOOTPRINT.
3. SITE DRAINAGE SHALL BE ESTABLISHED PRIOR TO CONSTRUCTION ACTIVITIES AND MAINTAINED DURING CONSTRUCTION ACTIVITIES.
4. THE EXPOSED SOIL SURFACE SHALL BE THOROUGHLY DENSIFIED IN PLACE BY MAKING SEVERAL PASSES WITH A HEAVY VIBRATORY ROLLER PRIOR TO PLACEMENT OF NEW FILL OR BEGINNING THE NEXT STAGE OF CONSTRUCTION.
A. MOISTURE CONDITIONING OF THE SUBGRADE BY THE ADDITION OF WATER OR DRYING SOILS MAY BE REQUIRED PRIOR TO CONSTRUCTION.
B. DO NOT OPERATE HEAVY VIBRATORY ROLLERS WITHIN 10-FEET LATERALLY OF EXISTING STRUCTURES. USE SMALLER EQUIPMENT OR ROLLERS ON STATIC MODE IN THOSE AREAS.
C. GEOTECHNICAL ENGINEER SHALL OBSERVE.
5. FILL SHALL NOT BE PLACED IN A FROZEN CONDITION OR UPON A FROZEN SUBGRADE. FROZEN MATERIALS MUST NOT BE USED AS ENGINEERED FILL AND NO FILL, FOOTINGS OR SLAB MUST BE PLACED ON SOILS THAT ARE FROZEN OR CONTAIN FROZEN MATERIAL.
STRUCTURAL FILL PLACEMENT AND COMPACTION: 1. STRUCTURAL FILL SHALL BE COMPRISED OF SOILS FREE OF EXCESSIVE ORGANIC MATTER AND OTHER DELETERIOUS MATERIALS. PRIOR TO PLACING FILL, EACH PROPOSED FILL MATERIAL SHALL BE SAMPLED AND TESTED TO MEASURE ITS MAXIMUM DRY DENSITY, OPTIMUM MOISTURE CONTENT, NATURAL MOISTURE CONTENT AND SUITABILITY FOR USE AS A STRUCTURAL FILL MATERIAL. STRUCTURAL FILL MATERIALS SHALL MEET THE FOLLOWING MINIMUM REQUIREMENTS: A. PLASTICITY INDEX OF 6 PERCENT OR LESS (ASTM D4318) B. SILT CLAY FINES CONTENT NOT GREATER THAN 25 PERCENT BY WEIGHT (ASTM D1140) C. MOISTURE CONTENT WITHIN 43 PERCENT OF THE STANDARD PROCTOR (ASTM D698) OPTIMUM MOISTURE CONTENT FOR COMPACTION (ASTM D2216)
2. STRUCTURAL FILL SHALL BE COMPACTED THROUGHOUT TO AT LEAST 98 PERCENT OF THE STANDARD PROCTOR MAXIMUM DENSITY (ASTM D698)
A. LOOSE LIFTS OF FILL SHALL BE NO MORE THAN 12 INCHES THICK PRIOR TO COMPACTION
a. LIMIT TO 4 INCHES THICK IF USING SMALL, WALK-BEHIND COMPACTION EQUIPMENT
B. STRUCTURAL FILL SHALL EXTEND AT LEAST 5 FEET FROM THE EDGE OF STRUCTURES
C. MOISTURE CONTENT SHALL BE WITHIN 43 PERCENT OF THE OPTIMUM MOISTURE CONTENT. IN ADDITION, FILL MATERIAL SHALL BE STABLE UNDER MOVEMENT OF THE CONSTRUCTION EQUIPMENT AND SHALL NOT EXHIBIT RUTTING OR PUMPING UNDER TRAFFIC.
3. WHERE PRESENT, THE GROUNDWATER SHALL BE MAINTAINED AT LEAST 2 FEET BELOW ANY SURFACE TO BE DENSIFIED PRIOR TO BEGINNING COMPACTION.
4. STRUCTURAL FILL PLACEMENT SHALL BE OBSERVED BY AN EXPERIENCED SOILS TESTING TECHNICIAN WORKING UNDER THE GUIDANCE OF THE GEOTECHNICAL ENGINEER. SOILS TESTING SHALL BE AS FOLLOWS: A. AT LEAST TWO FIELD DENSITY TESTS SHALL BE PERFORMED PER EACH 5,000 SQUARE FEET FOR EACH LIFT OF SOIL IN STRUCTURAL AREAS
B. AT LEAST ONE FIELD DENSITY TEST PER LIFT SHALL BE PERFORMED PER EACH 250 CUBIC FEET OF FILL PLACED IN A COMPACTED AREA SUCH AS ISOLATED TRENCHES AND IN TRENCHES OR BEHIND WALLS
C. ONE POINT PROCTOR VERIFICATION TEST (ASTM D698) SHALL BE PERFORMED ON THE FILL MATERIAL AT THE FREQUENCY DETERMINED BY THE GEOTECHNICAL ENGINEER AS NECESSARY TO VERIFY THE LABORATORY PROCTOR DATA.
SLAB ON GRADE: 1. 4 INCHES (MIN) OF COMPACTED CLEAN GRANULAR MATERIAL SHALL BE PLACED UNDER THE SLAB ON GRADE
A. GRANULAR MATERIAL SHALL CONSIST OF CLEAN SAND, CLASSIFYING AS USCS TYPE SP OR SW AND HAVE LESS THAN 5 PERCENT SILT/CLAY FINES BY WEIGHT PASSING THE No. 200 SIEVE WHEN TESTED BY ASTM D1140
B. COMPACTION SHALL BE AT LEAST 98 PERCENT OF THE STANDARD PROCTOR MAXIMUM DENSITY PER ASTM D698.
2. 15 MIL VAPOR BARRIER SHALL BE PAVED DIRECTLY BELOW SLAB. SEE SPECIFICATIONS FOR VAPOR BARRIER INFORMATION.
FOUNDATIONS: 1. FOUNDATION DESIGN IS BASED ON THE RECOMMENDATIONS CONTAINED IN GEOTECHNICAL INVESTIGATION REPORT NO. 23061058 BY SAME DATED NOVEMBER 15, 2024.
2. THE GEOTECHNICAL ENGINEER MUST BE THE SOLE JUDGE AS TO THE SUITABILITY OF UNDERLYING MATERIAL TO SUPPORT FOUNDATIONS AND MUST APPROVE BEARING MATERIAL BEFORE FOUNDATION INSTALLATION.
3. ALL FOUNDATION EXCAVATIONS MUST BE OBSERVED AND TESTED TO VERIFY THAT IN-SITU SOIL BEARING PRESSURES, COMPATIBLE WITH THE DESIGN WALLS, ARE ACHIEVED.
A. DYNAMIC CONE PENETROMETER (DCP) TESTING SHALL BE PERFORMED BY A REPRESENTATIVE OF THE GEOTECHNICAL ENGINEER.
B. IN THE CASES WHERE THE DCP TESTING INDICATES INSUFFICIENT BEARING CAPACITY, THE INADEQUATE SOILS SHALL BE OVER-EXCAVATED AND REPLACED WITH COMPACTED OPEN-GRADED, COARSE, WASHED, CRUSHED, MANUFACTURED GRANITIC GRAVEL MEETING GRADATION REQUIREMENTS OF NCDOT NO. 57 OR NO. 67 STONE. COMPACTION SHALL BE AT LEAST 95 PERCENT OF THE MODIFIED PROCTOR MAXIMUM DRY DENSITY PER ASTM D1557.
4. THE DEPTH OF THE RECOMMENDED OVER-EXCAVATION WILL BE DETERMINED AT THE TIME OF CONSTRUCTION BASED ON THE RESULTS OF THE DCP TESTING, AND SHALL BE EVALUATED BY THE GEOTECHNICAL ENGINEER.
5. ALL FOUNDATIONS MUST BE FORMED TO PREVENT THE CREATION OF AN ENLARGED AREA OF CONCRETE (MUSHROOM).
6. FOUNDATION EXCAVATIONS MUST BE OBSERVED, AND CONCRETE PLACED AS QUICKLY AS POSSIBLE TO AVOID EXPOSURE OF THE FOUNDATION BEARING SOILS TO WETTING AND DRYING. SURFACE WATER RUNOFF MUST BE DRAINED AWAY FROM THE EXCAVATIONS AND NOT BE ALLOWED TO POND. THE FOUNDATION CONCRETE MUST BE PLACED DURING THE SAME DAY THE EXCAVATION IS MADE. IF IT IS REQUIRED THAT FOOTING EXCAVATIONS BE LEFT OPEN FOR MORE THAN ONE DAY, THEY SHOULD BE PROTECTED TO REDUCE EVAPORATION AND ENTRY OF MOISTURE.
DEEP FOUNDATIONS: 1. DEEP FOUNDATION DESIGN IS BASED ON THE RECOMMENDATIONS CONTAINED IN GEOTECHNICAL INVESTIGATION REPORT NO. 23061058 BY SAME DATED NOVEMBER 15, 2024.
2. CONTINUOUS FLIGHT AUGER CAST-IN-PLACE REINFORCED CONCRETE PILES (ACP) INSTALLATION SHALL BE OBSERVED BY A REPRESENTATIVE OF THE GEOTECHNICAL ENGINEER.
3. REFERENCE DETAIL 150102 FOR ADDITIONAL PILE REQUIREMENTS.
EXCAVATION NEAR EXISTING FOUNDATIONS: 1. CONTRACTOR SHALL PROVIDE COVERAGE/PROTECTION AS REQUIRED TO PREVENT SATURATION, SLOUGHING AND EROSION OF BEARING SOIL.
2. EXCAVATING BEYOND THE BOTTOM OF EXISTING FOUNDATIONS: A. BEARING SOIL UNDERNEATH EXISTING FOUNDATION SHALL NOT BE UNDERMINED BY NEW CONSTRUCTION. B. CONTRACTOR SHALL PROVIDE TEMPORARY EXCAVATION SUPPORT DESIGNED/DESIGNED AND SEALED BY A QUALIFIED GEOTECHNICAL ENGINEER LICENSED IN THE PROJECT STATE.

STRUCTURAL ABBREVIATIONS

LIST MUST NOT BE CONSTRUED AS COMPREHENSIVE
ACI AMERICAN CONCRETE INSTITUTE
ACP AUGER CAST PILE
ADJ ADJACENT
ADOL ADDITIONAL
ADUL ADJACENT
MAX MAXIMUM
AMERICAN INSTITUTE OF STEEL CONSTRUCTION
MIN MINIMUM
MUFID MULTI-USER FLIGHT INFORMATION DISPLAY
AWS AMERICAN WELDING SOCIETY OF ENGINEERS
BIO BAGGAGE INFORMATION
BWS BASKET WEAVING SYSTEM DISPLAY
BOC BASIS OF DESIGN
CLEAR COLOR
CCJ CRACK CONTROL JOINT
CJ CONTROL JOINT
CJP COMPLETE JOINT PENETRATION
CMUJ CONCRETE MASONRY UNIT
CQL COLUMN
CONN CONNECTION
CONT CONTINUOUS
CONT CONTINUOUS
DET DETAIL
EACH EACH
EJ EXPANSION JOINT
EL ELEVATION
ELEV ELEVATOR
EDG EDGE OF DECK
EQ EQUAL
ETC ETCETERA
EXIST EXISTING
FID FLIGHT INFORMATION DISPLAY
FMD FOUNDATION
FT FOOT
FV FIELD VERIFY
GD GATE INFORMATION DISPLAY
HD HEADED
HOR HORIZONTAL
LHV LONG LEG VERTICAL
LOC LOCATION
LSH LONG SIDE HORIZONTAL
MNF MANUFACTURER
MAX MAXIMUM
MIN MINIMUM
MUFID MULTI-USER FLIGHT INFORMATION DISPLAY
ON CENTER ON CENTER
OCB PASSENGER BOARDING BRIDGE
PCB PLATE
PLF REINFORCEMENT
REQD REQUIRED
RFI REQUEST FOR INFORMATION
SCHED SCHEDULE
SIM SIMILAR
SOG SLAB-ON-GRADE
SPC SPACES
STD STANDARD
STIFF STIFFENER
STL STEEL
TAB TOP & BOTTOM
TFNO TOP OF FOUNDATION
TFC TOP OF FILE CAB
TRPCT TOP OF PRECAST TEE
TYP TOP OF PILASTER
TSOG TOP OF SLAB-ON-GRADE
TOS TOP OF STEEL
TSTL TOP OF STEEL
TYP TYPICAL
UNO UNLESS OTHERWISE NOTED
VERT VERTICAL
WIF WITH
WVF WELDED WIRE FABRIC



PROJECT TITLE: ILM AIRPORT BOULEVARD AND PARKING IMPROVEMENTS - PHASE II
PROJECT ADDRESS: 1740 AIRPORT BLVD, WILMINGTON, NC 28405

POST-INSTALLED ANCHOR/DOWEL NOTES:

- GENERAL: 1. POST-INSTALLED ANCHORS MUST ONLY BE USED WHERE SPECIFIED ON THE CONSTRUCTION DOCUMENTS.
2. BASIS OF DESIGN ANCHOR PRODUCTS ARE THOSE INDICATED ON THE CONSTRUCTION DOCUMENTS. SUBSTITUTION REQUESTS FOR ANCHORS OTHER THAN BOD ANCHORS MUST BE SUBMITTED TO THE EOR FOR WRITTEN APPROVAL. PROVIDE CALCULATIONS SIGNED AND SEALED BY A PROFESSIONAL ENGINEER DEMONSTRATING THAT THE SUBSTITUTED ANCHOR PRODUCT MEETS THE SPECIFIC PERFORMANCE REQUIREMENTS OF THE BOD ANCHOR PRODUCT.
3. CONTRACTOR MUST CONTACT EOR FOR WRITTEN APPROVAL PRIOR TO INSTALLING POST-INSTALLED ANCHORS FOR MISSING OR MISPLACED CAST-IN-PLACE ANCHORS.
4. ANCHORS MUST BE INSTALLED PER MANUFACTURER'S WRITTEN INSTRUCTIONS. CONTACT MANUFACTURER FOR TRAINING FOR PROPER ANCHOR INSTALLATION. SUBMIT TRAINING CERTIFICATE DOCUMENTATION FOR WORKERS INSTALLING POST-INSTALLED ANCHORS.
5. NO REINFORCEMENT SHALL BE CUT/DAMAGED DURING POST-INSTALLED DOWEL INSTALLATION.
A. CONTRACTOR SHALL LOCATE EXISTING REINFORCEMENT BY NON-DESTRUCTIVE TESTING AND MARK LOCATION ON SURFACE OF CONCRETE PRIOR TO DRILLING.
B. CONTRACTOR SHALL SUBMIT LOCATION OF EXISTING REINFORCEMENT WITH PROPOSED LOCATION OF DRILLING LOCATIONS FOR RECORD PURPOSES PRIOR TO DRILLING.
C. IF DRILLING LOCATIONS ARE IN CONFLICT WITH EXISTING REINFORCEMENT, CONTRACTOR SHALL SUBMIT RFI TO WITH NEW PROPOSED LOCATIONS FOR EOR REVIEW AND APPROVAL PRIOR TO DRILLING.
6. PROVIDE CONTINUOUS SPECIAL INSPECTION FOR ALL MECHANICAL AND ADHESIVE ANCHORS, AS REQUIRED BY THE APPLICABLE EVALUATION REPORT.
7. ANCHORS MUST BE HOT-DIPPED GALVANIZED OR STAINLESS STEEL.
CONCRETE MECHANICAL ANCHORS: 1. MECHANICAL ANCHORS MUST HAVE BEEN TESTED AND QUALIFIED FOR USE IN ACCORDANCE WITH ACI 305.2 AND ICC-ES AC193 FOR CRACKED AND UNCRACKED CONCRETE.
2. MECHANICAL ANCHORS MUST NOT BE INSTALLED INTO CONCRETE THAT IS LESS THAN 7 DAYS OLD.
3. SCREW ANCHORS MUST BE FOR INTERIOR USE ONLY.
4. BASIS OF DESIGN (BOD) IS HILTI KWIK HUS-EZ (ICC-ES ESR-3027).
CONCRETE ADHESIVE ANCHORS: 1. ADHESIVE ANCHORS MUST HAVE BEEN TESTED AND QUALIFIED FOR USE IN ACCORDANCE WITH ACI 305.4 AND ICC-ES AC308 FOR CRACKED AND UNCRACKED CONCRETE.
2. ADHESIVE ANCHORS MUST NOT BE INSTALLED INTO CONCRETE UNTIL IT HAS REACHED 21 DAYS AND CONCRETE COMPRESSIVE STRENGTH HAS REACHED 75% OF THE DESIGNED COMPRESSIVE STRENGTH.
3. INSTALLATION OF ADHESIVE ANCHORS INSTALLED HORIZONTALLY OR UPWARDLY INCLINED SUPPORTING SUSTAINED TENSION LOADS MUST BE PERFORMED BY PERSONNEL HAVING PASSED A PERFORMANCE TEST IN ACCORDANCE WITH THE ACI/CRSI ADHESIVE ANCHOR INSTALLER CERTIFICATION PROGRAM, OR EQUIVALENT.
4. BASIS OF DESIGN (BOD) IS HILTI HIT-HY 270 (ICC-ES ESR-3187) WITH ASTM A193 GR B7 OR ASTM F593 (A513 316) ANCHORS.
CONCRETE MASONRY UNIT MECHANICAL ANCHORS: 1. MECHANICAL ANCHORS MUST HAVE BEEN TESTED AND QUALIFIED FOR USE IN ACCORDANCE WITH ICC-ES AC101 OR AC105 FOR CONCRETE MASONRY UNITS.
2. MECHANICAL ANCHORS MUST BE INSTALLED IN FULLY GROUTED CELLS OR SOLID MASONRY.
3. ONLY ONE ANCHOR PER MASONRY CELL.
4. BASIS OF DESIGN (BOD) IS HILTI KWIK HUS-EZ (ICC-ES ESR-3056).
CONCRETE MASONRY UNIT ADHESIVE ANCHORS: 1. ADHESIVE ANCHORS MUST HAVE BEEN TESTED AND QUALIFIED FOR USE IN ACCORDANCE WITH ICC-ES AC308 FOR CONCRETE MASONRY UNITS.
2. ADHESIVE ANCHORS MUST BE INSTALLED IN FULLY GROUTED CELLS OR SOLID MASONRY.
3. ONLY ONE ANCHOR PER MASONRY CELL.
4. BASIS OF DESIGN IS HILTI HIT-HY 270 (ICC-ES ESR-4143) WITH ASTM A193 GR B7 OR ASTM F593 (A513 316) ANCHORS. BOLTS MUST BE 3/4" UNO. EMBED BOLTS 5 5/8" @ 8" CMU WALLS AND 7 5/8" @ 12" CMU WALLS.

REVISIONS table with columns: NO., DESCRIPTION, DATE. Row 1: Addendum 1, 04/10/2025

DATE ISSUED: 03/14/2025
REVIEWED BY: RLM
DRAWN BY: JFS
DESIGNED BY: JFS
PROJECT NUMBER: 2003-0070-006
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SEAL: FOR REVIEW ONLY NOT FOR CONSTRUCTION

SHEET TITLE: GENERAL STRUCTURAL NOTES

SHEET ID: S001

PROJECT STATUS: 100% BID SET

4/10/2025, 12:06:35 PM Autodesk Docs://103002070006_ILM_T04 (Rev) 04 Improv Design/20030070006_ILM_T04 Terminal and Tunnel_S_024.rvt

CONTINUOUS FLIGHT AUGER CAST-IN-PLACE PILE SCHEDULE (ACP)							
PILE MARK	DIAMETER	REINFORCEMENT			ALLOWABLE PILE LOAD CAPACITY		
		LONGITUDINAL	TIES	LENGTH*	COMPRESSION	TENSION	LATERAL
P-1	16"	(6) #7'S	#3'S @ 12" O.C. MAX	45'-4"	240 KIPS	27 KIPS	26 KIPS
P-2	16"	(6) #7'S	#3'S @ 12" O.C. MAX	60'-4"	240 KIPS	27 KIPS	26 KIPS

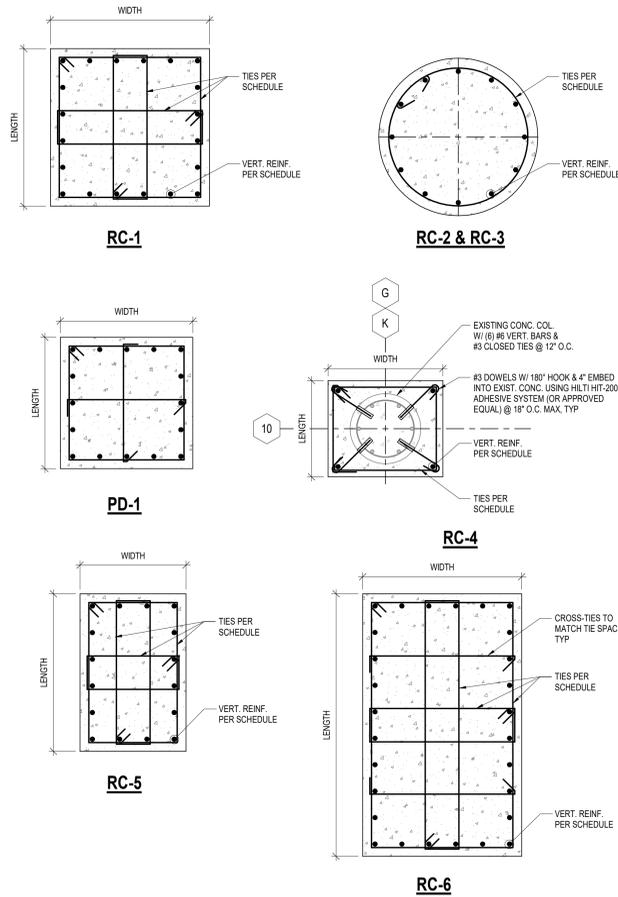
- NOTES:**
- ALLOWABLE PILE LOAD CAPACITY PROVIDED IS BASED ON INFORMATION PROVIDED IN GEOTECHNICAL REPORT REFERENCED ON SHEET 5001.
 - PILE LOAD TEST SHALL BE PERFORMED UNDER THE OBSERVATION OF THE GEOTECHNICAL ENGINEER AND IN ACCORDANCE WITH THE FOLLOWING:
 - STATIC LOAD TEST TO FAILURE OR AT LEAST TWICE THE ALLOWABLE PILE LOAD CAPACITY (TEST PER ASTM D143)
 - STATIC UPLIFT LOAD TEST TO AT LEAST TWICE THE ALLOWABLE PILE LOAD CAPACITY (TEST PER ASTM D3981)
 - STATIC LATERAL LOAD TEST TO AT LEAST TWICE THE ALLOWABLE PILE LOAD CAPACITY (TEST PER ASTM D3981)
 - LOAD TESTS SHALL BE PERFORMED ON SPECIAL PILES.
 - LOCATIONS OF TESTING PILES SHALL BE REVIEWED AND APPROVED BY THE GEOTECHNICAL ENGINEER.
 - * LENGTH PROVIDED IS FOR BIDDING PURPOSES ONLY. THE LENGTH OF EACH PILE SHALL BE SUFFICIENT TO BE EMBED AT LEAST 7'-0" INTO THE DENSE SANDY SOILS.
 - THE GEOTECHNICAL ENGINEER SHALL VERIFY THE PILE TIP HAS REACHED ADEQUATE DEPTH FOR EVERY PILE.
 - REFERENCE SPECIFICATION 316316 FOR ADDITIONAL INFORMATION.

1 CONTINUOUS FLIGHT AUGER CAST-IN-PLACE PILE SCHEDULE (ACP)

SCALE: N.T.S.

CONCRETE COLUMN & PEDESTAL SCHEDULE					
TYPE	WIDTH	LENGTH	VERTICAL BARS	TIES	REMARKS
RC-1	36"	36"	(20) #8 BARS	#4 CLOSED TIES @ 14" O.C. MAX	
RC-2	36"	36"	(12) #8 BARS	#4 CLOSED TIES @ 16" O.C. MAX	
RC-3	48"	48"	(24) #8 BARS	#4 CLOSED TIES @ 14" O.C. MAX	
RC-4	26"	22"	(4) #8 BARS	#4 CLOSED TIES @ 12" O.C. MAX	1" x 4" (2) PSI. SEE POST-INSTALLED ANCHOR NOTES
RC-5	24"	36"	(6) #8 BARS	#4 CLOSED TIES @ 12" O.C. MAX	
RC-6	36"	60"	(28) #8 BARS	#4 CLOSED TIES @ 12" O.C. MAX	
PD-1	30"	30"	(16) #7 BARS	#4 CLOSED TIES @ 12" O.C. MAX	

- NOTES:**
- REFERENCE DETAIL 6/S012 FOR ADDITIONAL REINFORCEMENT INFORMATION
 - ALTERNATE LOCATION OF



4 CONCRETE COLUMN SCHEDULE

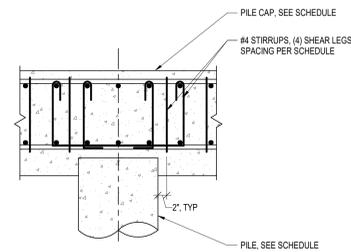
SCALE: N.T.S.

PILE CAP SCHEDULE FOR ACP							
PILE CAP MARK	GEOMETRY			REINFORCEMENT		REMARKS	
	WIDTH	LENGTH	TYPE/NO. PILES	THICKNESS	TOP BARS		BOTTOM BARS
PC-2	8'-6"	4'-0"	P-1 (2) PILES	34"	(6) #8", LONG WAY (12) #7", SHORT WAY	(6) #8", LONG WAY (12) #7", SHORT WAY	SEE 7/S013
PC-3	8'-6"	7'-11"	P-2 (3) PILES	36"	(10) #8", EA. WAY	(10) #8", EA. WAY	SEE 1/S013
PC-3A	8'-6"	7'-11"	P-1 (3) PILES	36"	(10) #8", EA. WAY	(10) #8", EA. WAY	SEE 1/S013
PC-3B	8'-6"	8'-9"	P-2 (3) PILES	36"	(12) #8", EA. WAY	(12) #8", EA. WAY	SEE 10/S013
PC-4	8'-6"	8'-6"	P-2 (4) PILES	48"	(12) #8", EA. WAY	(12) #8", EA. WAY	SEE 2/S013
PC-4A	8'-6"	8'-6"	P-1 (4) PILES	48"	(16) #8", EA. WAY	(16) #8", EA. WAY	SEE 2/S013, STIRRUPS @ 12" O.C. MAX, EA. WAY
PC-5	11'-4"	11'-4"	P-1 (5) PILES	60"	(20) #8", EA. WAY	(20) #8", EA. WAY	SEE 3/S013
PC-5A	8'-6"	13'-4"	P-2 (5) PILES	54"	(16) #8", LONG WAY (32) #8", SHORT WAY	(16) #8", LONG WAY (32) #8", SHORT WAY	SEE 4/S013, STIRRUPS @ 8" O.C. MAX, LONG WAY
PC-6	8'-6"	13'-0"	P-2 (6) PILES	48"	(12) #8", LONG WAY (19) #8", SHORT WAY	(12) #8", LONG WAY (19) #8", SHORT WAY	SEE 5/S013
PC-6A	SEE 6/S013	SEE 6/S013	P-1 (6) PILES	60"	(20) #8", LONG WAY (24) #8", SHORT WAY	(20) #8", LONG WAY (24) #8", SHORT WAY	SEE 6/S013
PC-6B	SEE 6/S013	SEE 6/S013	P-1 (6) PILES	60"	(20) #8", LONG WAY (24) #8", SHORT WAY	(20) #8", LONG WAY (24) #8", SHORT WAY	SEE 6/S013
PC-6C	SEE 1/S014	SEE 1/S014	P-1 (6) PILES	60"	#8" @ 5" O.C. MAX EA. WAY	#8" @ 5" O.C. MAX EA. WAY	SEE 1/S014
PC-6D	SEE 1/S014	SEE 1/S014	P-1 (6) PILES	60"	#8" @ 5" O.C. MAX EA. WAY	#8" @ 5" O.C. MAX EA. WAY	SEE 1/S014
PC-6E	8'-6"	13'-0"	P-1 (6) PILES	60"	#8" @ 8" O.C. MAX EA. WAY	#8" @ 8" O.C. MAX EA. WAY	SEE 2/S014
PC-8	SEE 8/S013	SEE 8/S013	P-1 (8) PILES	60"	#9" @ 4" O.C. MAX, EA. WAY	#9" @ 4" O.C. MAX, EA. WAY	SPICES NOT PERMITTED, SEE 9/S013
PC-9	SEE 8/S013	SEE 8/S013	P-1 (8) PILES	60"	#9" @ 4" O.C. MAX, EA. WAY	#9" @ 4" O.C. MAX, EA. WAY	SPICES NOT PERMITTED, SEE 9/S013
PC-9A	13'-0"	13'-0"	P-1 (8) PILES	60"	#8" @ 8" O.C. MAX, EA. WAY	#8" @ 8" O.C. MAX, EA. WAY	SEE 3/S014

- NOTES:**
- * DENOTES REINFORCEMENT BARS REQUIRE STANDARD HOOKS AT EACH END.
 - GRADE BEAM AND THE BEAM LONGITUDINAL REINFORCEMENT SHALL BE CONTINUOUS THROUGH PILE CAP.
 - GRADE BEAM AND THE BEAM FRAMING PERPENDICULAR INTO PILE CAP SHALL HAVE THE LONGITUDINAL REINFORCEMENT HOOKED INTO PILE CAP AT LEAST A LAP SPICE LENGTH.
 - STIRRUP REINFORCEMENT PER DETAIL 6/S012

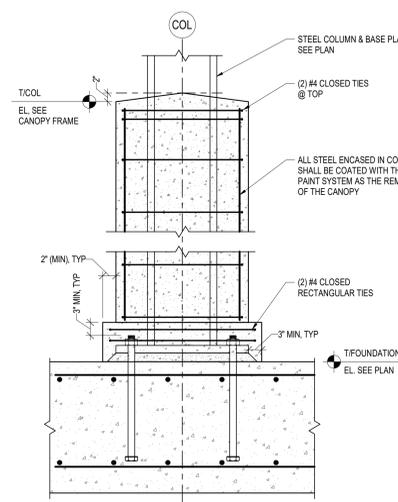
2 PILE CAP SCHEDULE FOR ACP

SCALE: N.T.S.



5 PILE CAP SHEAR REINF. TYPICAL DETAIL

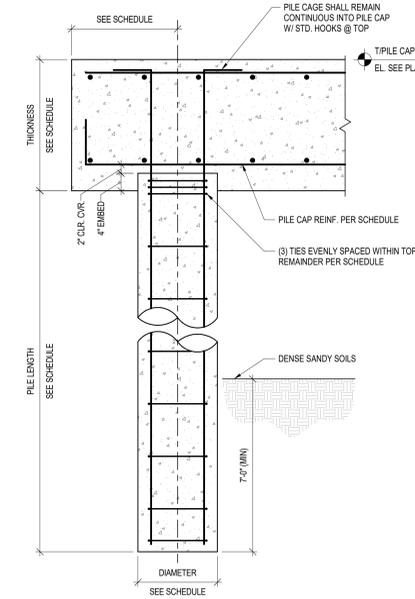
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7 COLUMN CONCRETE ENCASEMENT TYPICAL DETAIL

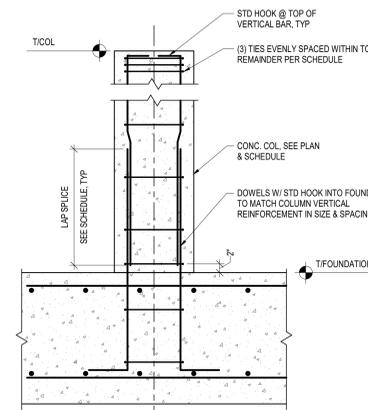
SCALE: N.T.S.

- NOTES:**
- REFERENCE TICKET LEVEL OVERALL PLAN FOR LOCATIONS AND TYPE
 - CONCRETE COLUMN FORM SHALL BE SONOTUBE FINISH FREE OR APPROVED EQUAL
 - EXPOSED CONCRETE FINISH AESTHETICS SHALL BE SATISFACTORY TO THE ARCHITECT



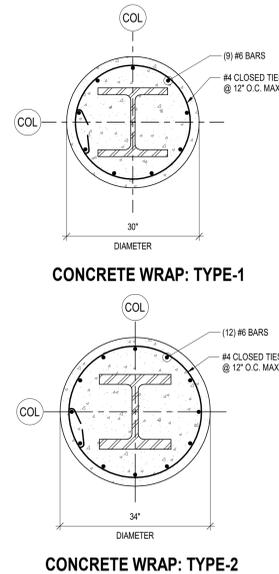
3 TYPICAL PILE & PILE CAP DETAIL

SCALE: N.T.S.

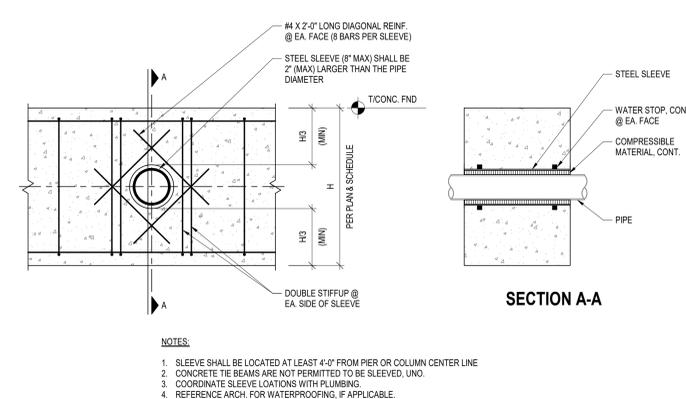


6 TYPICAL CONCRETE COLUMN DETAIL

SCALE: N.T.S.

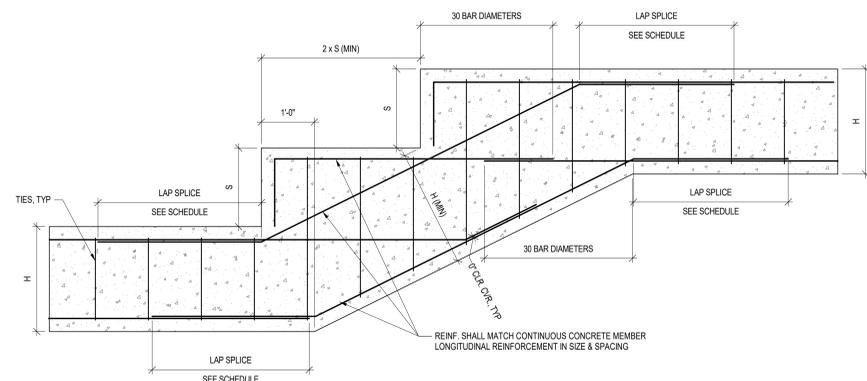


CONCRETE WRAP: TYPE-2



9 SLEEVE IN CONCRETE DETAIL

SCALE: N.T.S.



8 TYPICAL FOUNDATION STEP DETAIL

SCALE: N.T.S.

- NOTES:**
- *H DENOTES CONTINUOUS CONCRETE MEMBER DEPTH, SEE PLAN FOR ADDITIONAL INFORMATION
 - *S DENOTES CONTINUOUS CONCRETE MEMBER VERTICAL STEP DIMENSION, SEE PLAN FOR ADDITIONAL INFORMATION
 - BENT BARS HOOK STRAIGHT EXTENSION SHALL BE THE GREATER OF:
 - (12) BAR DIAMETERS OR "S"

REVISIONS		
NO.	DESCRIPTION	DATE
1	Addendum 1	04/10/2025

DATE ISSUED: 03/14/2025
REVIEWED BY: RLM
DRAWN BY: JFS
DESIGNED BY: JFS

PROJECT NUMBER:
2003-0070-006
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SEAL:
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SHEET TITLE:
CONCRETE TYPICAL
DETAILS

SHEET ID:

S012

PROJECT STATUS:
100% BID SET

REVISIONS

Table with 3 columns: NO., DESCRIPTION, DATE. Row 1: 1, ADDENDUM #1, 04/10/2025

DATE ISSUED: 03/14/2025
REVIEWED BY: SG
DRAWN BY: KS
DESIGNED BY: FG

PROJECT NUMBER:
1003-0070-004
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SEAL:

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SHEET TITLE:
ROOM FINISH LEGEND
AND NOTES

SHEET ID:

A610

PROJECT STATUS:
100% BID SET

VOL 2 FINISH LEGEND

Table with columns: MATERIAL TYPE, MATERIAL, DESCRIPTION, MANUFACTURER, SPECIFICATION, SIZE, REMARKS. Includes sections for GLAZING, EXTERIOR CEILING, FLOORING, METAL PANELS, PAINT, STONE PANELS, WALL, INTERIOR CASEWORK, CEILING, FLOORING, and WALL BASE.

VOL 2 FINISH LEGEND

Table with columns: MATERIAL TYPE, MATERIAL, DESCRIPTION, MANUFACTURER, SPECIFICATION, SIZE, REMARKS. Includes sections for GROUT, METAL PANELS, SPECIALTY, TOILET PARTITIONS, TRANSITIONS, WALL, and WALL BASE.

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100% Bid Set Submittal - Addendum 1
Date: 4-10-2025

Project: ILM Airport Boulevard – Parking Improvements Program
Phase 2 – Volume 2 - **BASE BID**

RS&H Project No.: 2003-0070-006

Revised Contract Documents. See the itemized list below.

Contract Drawings

A404 - ENLARGED FAMILY RESTROOM
4 hook coat rack added

A503 – SECTION DETAILS
Updated wall construction to show furring channels for clarity

A550 - CONNECTOR DETAILS
Added missing detail

A603 - DOOR DETAILS
Added missing detail

A610 - ROOM FINISH LEGEND AND NOTES
Color updated
Wall base updated

A811 - FLOOR FINISH TRANSITION DETAILS
Added new detail
Wood base detail added

T103 – PARTIAL COMMUNICATIONS RAMP LEVEL PLAN – AREA B
ADDED CBP communications conduit.

T108 – PARTIAL COMMUNICATIONS TICKET LEVEL PLAN – AREA B
ADDED CBP communications conduit.
ADDED CBP communications cabinet.

T401 – ENLARGED COMMUNICATIONS PLAN
ADDED CBP communications conduit.

T702 – COMMUNICATIONS RISER DIAGRAMS

ADDED CBP communications conduit.

TY001 – SECURITY GENERAL NOTES, SYMBOLS AND ABBREVIATIONS

UPDATED Security symbols legend.

TY108 – PARTIAL SECURITY TICKET LEVEL PLAN – AREA B

ADDED Intrusion detection system devices to Global Entry Office.

T702 – SECURITY RISER AND INTERCONNECT DIAGRAMS

ADDED Intrusion detection system devices to Global Entry Office and CBP communications conduit.

T108-3 – PARTIAL COMMUNICATIONS TICKET LEVEL PLAN – AREA B

ADDED CBP communications conduit.

ADDED CBP communications cabinet.

T702-3 – COMMUNICATIONS RISER DIAGRAMS

ADDED CBP communications conduit.

T103-4 – PARTIAL COMMUNICATIONS RAMP LEVEL PLAN – AREA B

ADDED CBP communications conduit.

T108-4 – PARTIAL COMMUNICATIONS TICKET LEVEL PLAN – AREA B

ADDED CBP communications conduit.

ADDED CBP communications cabinet.

T401-4 – ENLARGED COMMUNICATIONS PLAN

ADDED CBP communications conduit.

TY001-4 – SECURITY GENERAL NOTES, SYMBOLS AND ABBREVIATIONS

UPDATED Security symbols legend.

TY108-4 – PARTIAL SECURITY TICKET LEVEL PLAN – AREA B

ADDED Intrusion detection system devices to Global Entry Office.

Specifications

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REVISED. Specification 05 73 13 Glazing Decorative Metal Railing and specification 07 42 13.33 Metal Composite Material Wall Panels added to Table of Contents.

21 41 00 – Selective Demolition

REVISED specification. Added text 3.4,A,6.

03 30 00 – Cast in Place Concrete

REVISED specification. Added text 1.4,A,2,q. Added text 2.1,A. Added text 3.15.

05 73 13 – Glazed Decorative Metal Railings

ADDED specification.
07 42 13.23 – Metal Composite Material Wall Panels
ADDED specification.

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SECTION 02 41 19 - SELECTIVE DEMOLITION

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Demolition and removal of selected portions of building or structure.
 - 2. Salvage of existing items to be reused or recycled.
- B. Related Requirements:
 - 1. Section 01 73 00 "Execution" for cutting and patching procedures.
 - 2. Section 01 35 16 "Alteration Project Procedures" for general protection and work procedures for alteration projects.

1.2 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 store.
- 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.

1.3 MATERIALS OWNERSHIP

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

1.4 PREINSTALLATION MEETINGS

- A. Predemolition Conference: Conduct conference at Project site.

1. Inspect and discuss condition of construction to be selectively demolished.
2. Review structural load limitations of existing structure.
3. Review and finalize selective demolition schedule and verify availability of materials, demolition personnel, equipment, and facilities needed to make progress and avoid delays.
4. Review requirements of work performed by other trades that rely on substrates exposed by selective demolition operations.
5. Review areas where existing construction is to remain and requires protection.

1.5 INFORMATIONAL SUBMITTALS

- A. Qualification Data: For refrigerant recovery technician.
- B. Engineering Survey: Submit engineering survey of condition of building.
- C. Proposed Protection Measures: Submit report, including Drawings, that indicates the measures proposed for protecting individuals and property, for dust control. Indicate proposed locations and construction of barriers.
- D. Schedule of Selective Demolition Activities: Indicate the following:
 1. Detailed sequence of selective demolition and removal work, with starting and ending dates for each activity. Ensure Owner's Operations Manager that on-site operations are uninterrupted.
 2. Interruption of utility services. Indicate how long utility services will be interrupted.
 3. Coordination for shutoff, capping, and continuation of utility services.
 4. Use of elevator and stairs.
 5. Coordination of Owner's continuing occupancy of portions of existing building and of Owner's partial occupancy of completed Work.
- E. Predemolition Photographs or Video: Show existing conditions of adjoining construction, including finish surfaces, that might be misconstrued as damage caused by salvage and demolition operations. Comply with Section 01 32 33 "Photographic Documentation." Submit before Work begins.
- F. Statement of Refrigerant Recovery: Signed by refrigerant recovery technician responsible for recovering refrigerant, stating that all refrigerant that was present was recovered and that recovery was performed according to EPA regulations. Include name and address of technician and date refrigerant was recovered.
- G. Warranties: Documentation indicating that existing warranties are still in effect after completion of selective demolition.

1.6 CLOSEOUT SUBMITTALS

- A. Inventory: Submit a list of items that have been removed and salvaged.

1.7 QUALITY ASSURANCE

- A. Refrigerant Recovery Technician Qualifications: Certified by an EPA-approved certification program.

1.8 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.
 - 1. Before selective demolition, coordinate with Owner for removal of any items Owner removed items.
 - a. Any existing equipment or furniture left by tenant(s) deemed salvageable by Owner..
- C. Notify Architect of discrepancies between existing conditions and Drawings before proceeding with selective demolition.
- D. Hazardous Materials: It is not expected that hazardous materials will be encountered in the Work.
 - 1. Hazardous materials will be removed by Owner before start of the Work.
 - 2. If suspected hazardous materials are encountered, do not disturb; immediately notify Architect and Owner. Hazardous materials will be removed by Owner under a separate contract.
- E. Hazardous Materials: Present in buildings and structures to be selectively demolished. A report on the presence of hazardous materials is on file for review and use. Examine report to become aware of locations where hazardous materials are present.
 - 1. Hazardous material remediation is specified elsewhere in the Contract Documents.
 - 2. Do not disturb hazardous materials or items suspected of containing hazardous materials except under procedures specified elsewhere in the Contract Documents.

3. Owner will provide material safety data sheets for suspected hazardous materials that are known to be present in buildings and structures to be selectively demolished because of building operations or processes performed there.

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

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

1. Maintain fire-protection facilities in service during selective demolition operations.

1.9 WARRANTY

A. Existing Warranties: Remove, replace, patch, and repair materials and surfaces cut or damaged during selective demolition, by methods and with materials and using approved contractors so as not to void existing warranties. Coordinate with Owner for existing warranties and notify warrantor before proceeding.

B. Notify warrantor on completion of selective demolition, and obtain documentation verifying that existing system has been inspected and warranty remains in effect. Submit documentation at Project closeout.

1.10 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 ANSI/ASSP A10.6 and NFPA 241.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Verify that utilities have been disconnected and capped before starting selective demolition operations.
- B. 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.
- C. Perform an engineering survey of condition of building to determine whether removing any element might result in structural deficiency or unplanned collapse of any portion of structure or adjacent structures during selective building demolition operations.
 - 1. Perform surveys as the Work progresses to detect hazards resulting from selective demolition activities.
- D. Verify that hazardous materials have been remediated before proceeding with building demolition operations.
- E. Survey of Existing Conditions: Record existing conditions by use of preconstruction photographs or video existing as-built record drawings..
 - 1. Inventory and record the condition of items to be removed and salvaged.

3.2 PREPARATION

- A. Refrigerant: Before starting demolition, remove refrigerant from mechanical equipment according to 40 CFR 82 and regulations of authorities having jurisdiction.

3.3 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. Notify Airport Operations one week in advance of intent to turn off power.

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 fire-suppression systems, 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.
 - f. Ducts to Be Removed: Remove portion of ducts indicated to be removed and plug remaining ducts with same or compatible ductwork material.
 - g. Ducts to Be Abandoned in Place: Cap or plug ducts with same or compatible ductwork material and leave in place.

3.4 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 01 50 00 "Temporary Facilities and Controls."
 6. All publicly facing temporary protection shall be coordinated with owner to determine the need for branding and/or graphics. Contractor will be responsible for complying with owners branding and/or graphic requirements.

- 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.

3.5 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.
 - 5. Remove decayed, vermin-infested, or otherwise dangerous or unsuitable materials and promptly dispose of off-site.
 - 6. Remove structural framing members and lower to ground by method suitable to avoid free fall and to prevent ground impact or dust generation.
 - 7. Locate selective demolition equipment and remove debris and materials so as not to impose excessive loads on supporting walls, floors, or framing.
 - 8. 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 Salvaged Items:
 - 1. Clean salvaged items.
 - 2. Pack or crate items after cleaning. Identify contents of containers.
 - 3. Store items in a secure area until delivery to Owner.
 - 4. Transport items to Owner's storage area designated by Owner.

5. Protect items from damage during transport and storage.

D. 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.

E. 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.

3.6 SELECTIVE DEMOLITION PROCEDURES FOR SPECIFIC MATERIALS

- A. Concrete: Demolish in small sections. Using power-driven saw, cut concrete to a depth of at least 3/4 inch at junctures with construction to remain. Dislodge concrete from reinforcement at perimeter of areas being demolished, cut reinforcement, and then remove remainder of concrete. Neatly trim openings to dimensions indicated.
- B. Concrete: Demolish in sections. Cut concrete full depth at junctures with construction to remain and at regular intervals using power-driven saw, and then remove concrete between saw cuts.
- C. Masonry: Demolish in small sections. Cut masonry at junctures with construction to remain, using power-driven saw, and then remove masonry between saw cuts.
- D. Concrete Slabs-on-Grade: Saw-cut perimeter of area to be demolished, and then break up and remove.
- E. Resilient Floor Coverings: Remove floor coverings and adhesive according to recommendations in RFCI's "Recommended Work Practices for the Removal of Resilient Floor Coverings." Do not use methods requiring solvent-based adhesive strippers.
- F. Terrazzo: Remove terrazzo according to NTMA Standards (National Terrazzo and Mosaic Association's) written recommendations for terrazzo type indicated.
- G. Roofing: Remove no more existing roofing than what can be covered in one day by new roofing and so that building interior remains watertight and weathertight.
 1. Remove existing roof membrane, flashings, copings, and roof accessories.

2. Remove existing roofing system down to substrate.

3.7 DISPOSAL OF DEMOLISHED MATERIALS

- A. Remove demolition waste materials from Project site and recycle or dispose of them according to Section 01 74 19 "Construction Waste Management and Disposal."
 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.
 4. Comply with requirements specified in Section 01 74 19 "Construction Waste Management and Disposal."
- B. Burning: Do not burn demolished materials.

3.8 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.

3.9 SELECTIVE DEMOLITION SCHEDULE

- A. Remove: Roofing areas where indicated on Plans.
- B. Remove: Exterior wall and glazing where indicated on Plans.
- C. Remove and Salvage: Authority owned signage, carefully remove, store and coordinate with owner's representative.

END OF SECTION 02 41 19

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SECTION 03 30 00 - CAST-IN-PLACE CONCRETE

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. Cast-in-place concrete, including concrete materials, mixture design, placement procedures, and finishes.

1.3 DEFINITIONS

- A. Cementitious Materials: Portland cement alone or in combination with one or more of the following: blended hydraulic cement, fly ash, slag cement, other pozzolans, and silica fume; materials subject to compliance with requirements.
- B. Water/Cement Ratio (w/cm): The ratio by weight of water to cementitious materials.

1.4 PREINSTALLATION MEETINGS

- A. Preinstallation Conference: Conduct conference at Project site.
 - 1. Require representatives of each entity directly concerned with cast-in-place concrete to attend, including the following:
 - a. Contractor's superintendent.
 - b. Independent testing agency responsible for concrete design mixtures.
 - c. Ready-mix concrete manufacturer.
 - d. Concrete Subcontractor.
 - 2. Review the following:
 - a. Special inspection and testing and inspecting agency procedures for field quality control.
 - b. Construction joints, control joints, isolation joints, and joint-filler strips.
 - c. Semirigid joint fillers.

- d. Vapor-retarder installation.
- e. Anchor rod and anchorage device installation tolerances.
- f. Cold and hot weather concreting procedures.
- g. Concrete finishes and finishing.
- h. Curing procedures.
- i. Forms and form-removal limitations.
- j. Shoring and reshoring procedures.
- k. Methods for achieving specified floor and slab flatness and levelness.
- l. Floor and slab flatness and levelness measurements.
- m. Concrete repair procedures.
- n. Concrete protection.
- o. Initial curing and field curing of field test cylinders (ASTM C31/C31M.)
- p. Protection of field cured field test cylinders.
- q. **Mass concrete procedures.**

1.5 ACTION SUBMITTALS

A. Product Data: For each of the following.

- 1. Portland cement.
- 2. Fly ash.
- 3. Silica fume.
- 4. Aggregates.
- 5. Admixtures:
 - a. Include limitations of use, including restrictions on cementitious materials, supplementary cementitious materials, air entrainment, aggregates, temperature at time of concrete placement, relative humidity at time of concrete placement, curing conditions, and use of other admixtures.
- 6. Vapor retarders.
- 7. Waterstops
- 8. Floor and slab treatments.
- 9. Liquid floor treatments.
- 10. Curing materials.
 - a. Include documentation from color pigment manufacturer, indicating that proposed methods of curing are recommended by color pigment manufacturer.
- 11. Joint fillers.
- 12. Repair materials.
- 13. Nonshrink grout.
- 14. Reinforcement.

- B. Design Mixtures: Shall demonstrate compliance for with ACI 318 Chapter 26 for each concrete mixture and shall include the following:
1. Mixture identification.
 2. Minimum 28-day compressive strength.
 3. Durability exposure class.
 4. Maximum w/cm.
 5. Calculated equilibrium unit weight, for lightweight concrete.
 6. Slump limit.
 7. Air content.
 8. Nominal maximum aggregate size.
 9. Intended placement method.
 10. Submit alternate design mixtures when characteristics of materials, Project conditions, weather, test results, or other circumstances warrant adjustments.
- C. Shop Drawings:
1. Construction Joint Layout: Indicate proposed construction joints required to construct the structure.
 - a. Location of construction joints is subject to approval of the Architect.
 2. Concrete Reinforcement: Indicate bending, placement, and fabrication.
 - a. Shop Drawings shall comply with ACI 315 showing bar schedules, stirrup spacing, diagrams of bent bars, and arrangement of reinforcement.
- D. Samples: For vapor retarder.
- E. Concrete Schedule: For each location of each Class of concrete indicated in "Concrete Mixtures" Article, including the following:
1. Concrete Class designation.
 2. Location within Project.
 3. Exposure Class designation.
 4. Formed Surface Finish designation and final finish.
 5. Final finish for floors.
 6. Curing process.
 7. Floor treatment if any.

1.6 INFORMATIONAL SUBMITTALS

- A. Qualification Data: For the following:
1. Installer: Include copies of applicable ACI certificates.
 2. Ready-mixed concrete manufacturer.
 3. Testing agency: Include copies of applicable ACI certificates.

B. Material Certificates: For each of the following, signed by manufacturers:

1. Cementitious materials.
2. Admixtures.
3. Curing compounds.
4. Floor and slab treatments.
5. Bonding agents.
6. Adhesives.
7. Vapor retarders.
8. Semirigid joint filler.
9. Joint-filler strips.
10. Repair materials.

C. Material Test Reports: For the following, from a qualified testing agency:

1. Portland cement.
2. Fly ash.
3. Slag cement.
4. Silica fume.
5. Aggregates.
6. Admixtures.

D. Floor surface flatness and levelness measurements report, indicating compliance with specified tolerances.

E. Research Reports:

1. For concrete admixtures in accordance with ICC's Acceptance Criteria AC198.
2. For sheet vapor retarder/termite barrier, showing compliance with ICC AC380.

F. Preconstruction Test Reports: For each mix design.

G. Field quality-control reports.

H. Minutes of preinstallation conference.

1.7 QUALITY ASSURANCE

A. Installer Qualifications: A qualified installer who employs Project personnel qualified as an ACI-certified Flatwork Technician and Finisher and a supervisor who is a certified ACI Flatwork Concrete Finisher/Technician or an ACI Concrete Flatwork Technician with experience installing and finishing concrete, incorporating admixtures.

1. Post-Installed Concrete Anchors Installers: ACI-certified Adhesive Anchor Installer.

- B. Ready-Mixed Concrete Manufacturer Qualifications: A firm experienced in manufacturing ready-mixed concrete products and that complies with ASTM C94/C94M requirements for production facilities and equipment.
 - 1. Manufacturer certified in accordance with NRMCA's "Certification of Ready Mixed Concrete Production Facilities."
- C. Laboratory Testing Agency Qualifications: A testing agency qualified in accordance with ASTM C1077 and ASTM E329 for testing indicated and employing an ACI-certified Concrete Quality Control Technical Manager.
 - 1. Personnel performing laboratory tests shall be an ACI-certified Concrete Strength Testing Technician and Concrete Laboratory Testing Technician, Grade I. Testing agency laboratory supervisor shall be an ACI-certified Concrete Laboratory Testing Technician, Grade II.
- D. Field Quality Control Testing Agency Qualifications: An independent agency, acceptable to authorities having jurisdiction, qualified in accordance with ASTM C1077 and ASTM E329 for testing indicated.
 - 1. Personnel conducting field tests shall be qualified as an ACI Concrete Field Testing Technician, Grade 1, in accordance with ACI CPP 610.1 or an equivalent certification program.

1.8 PRECONSTRUCTION TESTING

- A. Preconstruction Testing Service: Engage a qualified testing agency to perform preconstruction testing on each concrete mixture.
 - 1. Include the following information in each test report:
 - a. Admixture dosage rates.
 - b. Slump.
 - c. Air content.
 - d. Seven-day compressive strength.
 - e. 28-day compressive strength.

1.9 DELIVERY, STORAGE, AND HANDLING

- A. Comply with ASTM C94/C94M and ACI 301 (ACI 301M).

1.10 FIELD CONDITIONS

- A. Cold-Weather Placement: Comply with ACI 301 (ACI 301M) and ACI 306.1 and as follows.
1. Protect concrete work from physical damage or reduced strength that could be caused by frost, freezing actions, or low temperatures.
 2. When average high and low temperature is expected to fall below 40 deg F (4.4 deg C) for three successive days, maintain delivered concrete mixture temperature within the temperature range required by ACI 301 (ACI 301M).
 3. Do not use frozen materials or materials containing ice or snow.
 4. Do not place concrete in contact with surfaces less than 35 deg F (1.7 deg C), other than reinforcing steel.
 5. Do not use calcium chloride, salt, or other materials containing antifreeze agents or chemical accelerators unless otherwise specified and approved in mixture designs.
- B. Hot-Weather Placement: Comply with ACI 301 (ACI 301M) and ACI 305.1 (ACI 305.1M), and as follows:
1. Maintain concrete temperature at time of discharge to not exceed 95 deg F (35 deg C).
 2. Fog-spray forms, steel reinforcement, and subgrade just before placing concrete. Keep subgrade uniformly moist without standing water, soft spots, or dry areas.

PART 2 - PRODUCTS

2.1 CONCRETE, GENERAL

- A. ACI Publications: Comply with ACI 301 (ACI 301M), ACI 207 (ACI 207M), and ACI 117 (ACI 117M) unless modified by requirements in the Contract Documents.

2.2 CONCRETE MATERIALS

- A. Source Limitations:
1. Obtain all concrete mixtures from a single ready-mixed concrete manufacturer for entire Project.
 2. Obtain each type or class of cementitious material of the same brand from the same manufacturer's plant.
 3. Obtain aggregate from single source.
 4. Obtain each type of admixture from single source from single manufacturer.

B. Cementitious Materials:

1. Portland Cement: ASTM C150/C150M, as follows:
 - a. Provide Type II cement, except as otherwise indicated
 - b. Provide white cement shown or scheduled.
 - c. Use only one brand of cement for each required type throughout the project, unless otherwise accepted by the Architect/Engineer.
2. Blended Hydraulic Cement: ASTM C595/C595M, Type IL, portland-limestone cement.
3. Fly Ash: ASTM C618, Class C or F.
4. Silica Fume: ASTM C1240 amorphous silica.

C. Normal-Weight Aggregates: ASTM C33/C33M, Class 3S for all concrete exposed to weather and Class 3M for all other concrete, coarse aggregate or better, graded. Provide aggregates from a single source.

1. Maximum Coarse-Aggregate Size: Shall not be larger than 3/4-inch or 1/5 of the narrowest dimension between sides of forms, 1/3 of the depths of slabs, nor 3/4 of the minimum clear spacing between individual reinforcing bars or bundles of bars.
 - a. Clean, uncoated, processed aggregate containing no clay, mud, loam, or foreign matter, as follows:
 - 1) Crushed stone processed from natural rock or stone.
 - 2) Washed gravel, either natural or crushed. Use of pit or bank run gravel is not permitted.
2. Fine Aggregate: Free of materials with deleterious reactivity to alkali in cement.
3. Aggregate not conforming to ASTM C33 are permitted if they have been shown by test or actual service to produce concrete of adequate strength and durability and are approved by the building official.

D. Lightweight Aggregate: ASTM C330/C330M, 3/8-inch (10-mm) nominal maximum aggregate size.

E. Air-Entraining Admixture: ASTM C260/C260M.

F. Chemical Admixtures: Certified by manufacturer to be compatible with other admixtures that do not contribute water-soluble chloride ions exceeding those permitted in hardened concrete. Do not use calcium chloride or admixtures containing calcium chloride.

1. Water-Reducing Admixture: ASTM C494/C494M, Type A.
2. Retarding Admixture: ASTM C494/C494M, Type B.
3. Water-Reducing and -Retarding Admixture: ASTM C494/C494M, Type D.
4. High-Range, Water-Reducing Admixture: ASTM C494/C494M, Type F.

5. High-Range, Water-Reducing and -Retarding Admixture: ASTM C494/C494M, Type G.
6. Plasticizing and Retarding Admixture: ASTM C1017/C1017M, Type II.
7. Color: As selected by Architect from manufacturer's full range.

G. Water: ASTM C94/C94M, potable

2.3 REINFORCING MATERIALS

A. Reinforcing Bar: ASTM A615 (S1), Grade 60

B. Galvanized Reinforcing Bar: ASTM A767, after fabrication and bending, only where specified or noted on drawings.

C. Steel Wire: ASTM A82, plain, cold drawn, steel.

D. Welded Wire Fabric: ASTM A1064, welded steel wire fabric.

E. Welded Deformed Steel Wire Fabric: ASTM A497.

F. Supports for Reinforcement: Provide supports for reinforcement including bolsters, chairs, spacers and other devices for spacing, supporting and fastening reinforcing bars and welded wire fabric in place. Use wire bar type supports complying with CRSI recommendations, unless otherwise indicated. Wood, clay brick and other devices will not be acceptable.

1. Slabs-on-Grade: Use supports or horizontal runners where wetted base material will not support chair legs.
2. Exposed To View Concrete Surfaces: Where legs of supports are in contact with forms, provide supports with legs which are hot dip galvanized or plastic protected or stainless steel protected.

2.4 FORM-FACING MATERIALS

A. Forms for Exposed Finish Concrete:

1. Unless otherwise shown or specified, construct formwork for exposed concrete surfaces with plywood, metal framed plywood faced or other acceptable panel type materials, to provide continuous, straight, smooth, exposed surfaces. Furnish in largest practicable sizes to minimize number of joints and to conform to joint system shown on drawings. Provide form material with sufficient thickness to withstand pressure of newly placed concrete without bow or deflection.
2. Use overlaid plywood complying with U. S. Product Standard PS 1 "B B High Density Overlaid Concrete Form," Class I.

- B. Form for Unexposed Finish Concrete: Form concrete surface which will be unexposed in finished structure with plywood, lumber, metal or other acceptable material. Provide lumber dressed on at least two edges and one side for tight fit.
- C. Form Coatings: Provide commercial formulation form coating compounds that will not bond with, stain nor adversely affect concrete surfaces, and will not impair subsequent treatments of concrete surfaces to be cured with water or curing compound.

2.5 VAPOR RETARDERS

- A. Sheet Vapor Retarder, Class A: ASTM E1745, Class A; not less than 15 mils thick. Include manufacturer's recommended adhesive or pressure-sensitive tape.

2.6 LIQUID FLOOR TREATMENTS

- A. Penetrating Liquid Floor Treatment: Clear, chemically reactive, waterborne solution of inorganic silicate or silicate materials and proprietary components; odorless; that penetrates, hardens, and densifies concrete surfaces.
 - 1. Products: Subject to compliance with requirements, provide one of the following:
 - a. ChemMasters, Inc; Chemisil Plus.
 - b. ChemTec International; ChemTec One.
 - c. Dayton Superior; Pentra-Hard Densifier, Sure Hard Densifier J17.
 - d. Euclid Chemical Company (The); an RPM company; Euco Diamond Hard.
 - e. Laticrete International, Inc.; L&M Seal Hard.
 - f. SpecChem, LLC; LithSeal SC.
 - g. Vexcon Chemicals Inc.; Vexcon StarSeal PS Clear.

2.7 CURING MATERIALS

- A. Evaporation Retarder: Waterborne, monomolecular film forming, manufactured for application to fresh concrete.
 - 1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - a. ChemMasters, Inc.
 - b. Dayton Superior.
 - c. Euclid Chemical Company (The); an RPM company.
 - d. Laticrete International, Inc.
 - e. Sika Corporation.
 - f. SpecChem, LLC.

- B. Absorptive Cover: AASHTO M 182, Class 3, burlap cloth made from jute or kenaf, weighing approximately 9 oz./sq. yd. (305 g/sq. m) when dry.
- C. Moisture-Retaining Cover: ASTM C171, polyethylene film burlap-polyethylene sheet.
 - 1. Color:
 - a. Ambient Temperature Below 50 deg F (10 deg C): Black.
 - b. Ambient Temperature between 50 deg F (10 deg C) and 85 deg F (29 deg C): Any color.
 - c. Ambient Temperature Above 85 deg F (29 deg C): White.
- D. Curing Paper: Eight-feet- (2438-mm-) wide paper, consisting of two layers of fibered kraft paper laminated with double coating of asphalt.
 - 1. Products: Subject to compliance with requirements, provide the following:
 - a. Fortifiber Building Systems Group; Sisalkraft SK-10.
- E. Clear, Waterborne, Membrane-Forming, Dissipating Curing Compound: ASTM C309, Type 1, Class B.
 - 1. Products: Subject to compliance with requirements, provide one of the following:
 - a. Anti-Hydro International, Inc; A-H Curing Compound #2 DR WB.
 - b. ChemMasters, Inc; Safe-Cure Clear DR.
 - c. Dayton Superior; Clear Cure VOC J7WB, Clear Resin Cure J11W.
 - d. Euclid Chemical Company (The); an RPM company; Kurez DR VOX.
 - e. Laticrete International, Inc.; L&M CURE R.
 - f. SpecChem, LLC; PaveCure Rez, SpecRez.

2.8 RELATED MATERIALS

- A. Expansion- and Isolation-Joint-Filler Strips: ASTM D1751, asphalt-saturated cellulosic fiber or ASTM D1752, cork or self-expanding cork.
- B. Waterstops: Provide flat, dumbbell type or centerbulb type waterstops at construction joints and other joints as shown. Size to suit joints.
 - 1. Rubber or PVC waterstops, at Contractor's option, with rubber units complying with Corps of Engineers CRD C513 and PVC units complying with CRD C572.
- C. Bonding Agent: ASTM C1059/C1059M, Type II, nonredispersible, acrylic emulsion or styrene butadiene.

- D. Epoxy Bonding Adhesive: ASTM C881, two-component epoxy resin, capable of humid curing and bonding to damp surfaces, of class suitable for application temperature and of grade and class to suit requirements, and as follows:
1. Types IV and V, load bearing, for bonding hardened or freshly mixed concrete to hardened concrete.
- E. Nonshrink Grout:
1. Materials: Grouting shall be performed with a material meeting the performance requirements that follow. Cement based grouts shall have a minimum 5-year history of use and meet the following performance requirements at maximum water. They shall not contain expansive cement or metallic particles such as aluminum powder or iron filings.
 - a. Plastic Volume Change: The grout shall have no shrinkage (0.0 percent) and a maximum of 0.4 percent expansion from time of placement until final set when tested according to ASTM C827.
 - b. Hardened Volume Change: The grout shall have no shrinkage (0.0 percent) and a maximum of 0.2 percent expansion in the hardened state when tested according to CRD C 621.
 - c. Compressive Strength: The grout shall have a minimum 28 day compressive strength of 8,000 psi when tested according to ASTM C109, restrained.
 - d. Creep: The grout shall have creep characteristics equal to or less than the concrete on which it is bearing.
 - e. Working Time: The grout for anchor bolt sleeves shall have a fluid consistency with a time of efflux of less than 30 seconds and all other grout shall have a flow consistency greater than 125 percent for a minimum of 45 minutes when tested according to applicable consistency sections of ASTM C827 at 15 minute intervals.
 2. Approved Manufacturers:
 - a. Master Builders, Inc., Cleveland, Ohio
 - b. Sika Corporation, Lyndhurst, New Jersey
 - c. Five Star Products, Inc., Fairfield, Connecticut
 - d. Lambert Corporation, Orlando, Florida
 - e. U.S. Grout Corporation, Fairfield, Connecticut

2.9 REPAIR MATERIALS

- A. Repair Underlayment: Cement-based, polymer-modified, self-leveling product that can be applied in thicknesses from 1/8 inch (3 mm) and that can be feathered at edges to match adjacent floor elevations.
1. Cement Binder: ASTM C150/C150M portland cement or hydraulic or blended hydraulic cement, as defined in ASTM C219.

2. Primer: Product of underlayment manufacturer recommended for substrate, conditions, and application.
 3. Aggregate: Well-graded, washed gravel, 1/8 to 1/4 inch (3 to 6 mm) or coarse sand, as recommended by underlayment manufacturer.
 4. Compressive Strength: Not less than base concrete strength at 28 days when tested in accordance with ASTM C109/C109M.
- B. Repair Overlayment: Cement-based, polymer-modified, self-leveling product that can be applied in thicknesses from 1/4 inch (6 mm) and that can be filled in over a scarified surface to match adjacent floor elevations.
1. Cement Binder: ASTM C150/C150M portland cement or hydraulic or blended hydraulic cement, as defined in ASTM C219.
 2. Primer: Product of topping manufacturer recommended for substrate, conditions, and application.
 3. Aggregate: Well-graded, washed gravel, 1/8 to 1/4 inch (3.2 to 6 mm) or coarse sand as recommended by topping manufacturer.
 4. Compressive Strength: Not less than 5000 psi (34.5 MPa) at 28 days when tested in accordance with ASTM C109/C109M.
- C. Repair Materials: Proprietary systems recommended by the manufacturer for the specific applications required. Examples are as follows:
1. Bonding Compound: Sikadur 32 Hi Mod LPL.
 2. Patching Mortar: Sikatop 111 and 122.
 3. Injection Adhesive: Sikadur 35 Hi Mod LV.

2.10 CONCRETE MIXTURES, GENERAL

- A. Prepare design mixtures for each type and strength of concrete, proportioned on the basis of laboratory trial mixture or field test data, or both, in accordance with ACI 301 (ACI 301M).
1. Use a qualified testing agency for preparing and reporting proposed mixture designs, based on laboratory trial mixtures.
- B. Concrete flexural strength: All concrete shall have the laboratory preparing the mix design be accredited in accordance with ASTM C1077.
1. Concrete shall be proportioned to achieve a 28-day flexural strength that meets or exceeds flexural strength of 650 psi per ASTM C78.
- C. Cementitious Materials: Limit percentage, by weight, of cementitious materials other than portland cement in concrete as follows:

1. Minimum Cementitious Materials Content: All concrete shall contain a minimum of 5 1/2 sacks of cement per cubic yard. Tremie concrete, where required, shall contain a minimum of seven sacks of cement per cubic yard and shall meet requirements per ACI 301. (ACI 301M)
2. Fly Ash or Other Pozzolans: Not to exceed 25 percent by mass.
3. Silica Fume: Not to exceed 10 percent by mass.
4. Total of Fly Ash or Other Pozzolans and Silica Fume: Not to exceed 35 percent by mass with fly ash or pozzolans not exceeding 25 percent by mass and silica fume not exceeding 10 percent by mass.

D. Admixtures: Use admixtures in accordance with manufacturer's written instructions.

1. Use water-reducing, high-range water-reducing or plasticizing admixture in concrete, as required, for placement and workability.
2. Use water-reducing and -retarding admixture when required by high temperatures, low humidity, or other adverse placement conditions.

2.11 CONCRETE MIXTURES

A. Class A: Normal-weight concrete used for reinforced foundations and wall members not exposed to weather.

1. Exposure Class: ACI 318 (ACI 318M) F0.
2. Minimum Compressive Strength: As indicated on Drawings at 28 days.
3. Maximum w/cm: 0.45.
4. Slump Limit: 3-1/2 inch, plus or minus 1-1/2 inch. Where use of superplasticizer is permitted, the proposed slump shall be no greater than the supplier's recommendations, as indicated on the approved mix design submittal, after addition of the admixture.
5. Air Content: Do not use an air-entraining admixture or allow total air content to exceed 5 percent.

B. Class B: Normal-weight concrete used for slabs and beams not exposed to weather.

1. Exposure Class: ACI 318 (ACI 318M) F0.
2. Minimum Compressive Strength: As indicated on Drawings at 28 days.
3. Maximum w/cm: 0.45.
4. Slump Limit: 4 inches, plus or minus 1 inch. Where use of superplasticizer is permitted, the proposed slump shall be no greater than the supplier's recommendations, as indicated on the approved mix design submittal, after addition of the admixture.
5. Air Content: Do not use an air-entraining admixture or allow total air content to exceed 3 percent for concrete used in trowel-finished floors.

- C. Class C: Normal-weight concrete used for slabs, walls, and any concrete member exposed to weather.
1. Exposure Class: ACI 318 (ACI 318M) F2.
 2. Minimum Compressive Strength: As indicated on Drawings at 28 days.
 3. Maximum w/cm: 0.45.
 4. Slump Limit: 3-1/2 inch, plus or minus 1-1/2 inch. Where use of superplasticizer is permitted, the proposed slump shall be no greater than the supplier's recommendations, as indicated on the approved mix design submittal, after addition of the admixture.
 5. Air Content per ACI 318 Table 19.3.3.1:
 - a. Exposure Classes F2 and F3: 6 percent, plus or minus 1.5 percent at point of delivery for concrete containing 3/4-inch or 1-inch nominal maximum aggregate.
- D. Class D: Structural lightweight concrete used for interior suspended slabs.
1. Exposure Class: ACI 318 (ACI 318M) F0.
 2. Minimum Compressive Strength: As indicated on Drawings at 28 days.
 3. Calculated Equilibrium Unit Weight: 115 lb/cu. ft. (1842 kg/cu. m), plus or minus 3 lb/cu. ft. (48.1 kg/cu. m) as determined by ASTM C567/C567M.
 4. Slump Limit: 4 inches (100 mm), plus or minus 1 inch (25 mm).
 5. Air Content:
 - a. Do not use an air-entraining admixture or allow total air content to exceed 3 percent for concrete used in trowel-finished floors.
- E. Class E: Normal-weight concrete used for exterior suspended slabs.
1. Exposure Class: ACI 318 (ACI 318M) F3.
 2. Minimum Compressive Strength: As indicated on Drawings at 28 days.
 3. Maximum w/cm: 0.40.
 4. Slump Limit: 3-1/2 inch, plus or minus 1-1/2 inch. Where use of superplasticizer is permitted, the proposed slump shall be no greater than the supplier's recommendations, as indicated on the approved mix design submittal, after addition of the admixture.
 5. Air Content per ACI 318 Table 19.3.3.1:
 6. Exposure Classes F2 and F3: 6 percent, plus or minus 1.5 percent at point of delivery for concrete containing 3/4-inch or 1-inch nominal maximum aggregate.

2.12 PUMP PLACEMENT EQUIPMENT

- A. Minimum inside diameter of the pipeline shall be at least three times the maximum coarse aggregate size.

- B. Aluminum pipe shall not be used.
- C. Pump shall have an actual field service demonstrated capacity of placing not less than 25 cubic yards per hour.
- D. Standby placement capability equal to that being used shall be available on the job site at all times during pumping.
- E. For pump placement of concrete the slump shall be in accordance with the Concrete Mixture limits at point of discharge. At the point of entry the slump shall not exceed the design slump plus the tolerance by more than 1 inch

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Verification of Conditions:
 - 1. Before placing concrete, verify that installation of concrete forms, accessories, and reinforcement, and embedded items is complete and that required inspections have been performed.
 - 2. Do not proceed until unsatisfactory conditions have been corrected.

3.2 PREPARATION

- A. Provide reasonable auxiliary services to accommodate field testing and inspections, acceptable to testing agency, including the following:
 - 1. Daily access to the Work.
 - 2. Incidental labor and facilities necessary to facilitate tests and inspections.
 - 3. Secure space for storage, initial curing, and field curing of test samples, including source of water and continuous electrical power at Project site during site curing period for test samples.
 - 4. Security and protection for test samples and for testing and inspection equipment at Project site.

3.3 FORMS

- A. Design: Design of formwork, including shoring and reshoring, for structural stability and sufficiency is the Contractor's responsibility. Refer to Paragraph 3.4 Shores and Supports herein. Design, erect, support, brace and maintain formwork to support vertical and lateral loads that might be applied until such loads can be supported by the concrete structure.

- B. Construction: Construct forms complying with ACI 347, to sizes, shapes, lines and dimensions shown, and to obtain accurate alignment, location, grades, level and plumb work in finished structures. Provide for openings, offsets, keyways, recesses, moldings, rustications, reglets, chamfers, blocking, screeds, bulkheads, anchorages and inserts, and other features required in work. Provide top forms for inclined surfaces where slope is too steep to place concrete with bottom forms only. Use selected materials to obtain required finishes. Solidly butt joints and provide backup joints to prevent leakage of cement paste.
- C. Provisions for Removal: Fabricate forms for easy removal without hammering or prying against the concrete surfaces. Provide crush plates or wrecking plates where stripping may damage cast concrete surfaces. Kerf wood inserts for forming keyways, reglets, and recesses to prevent swelling and for easy removal.
- D. Accessibility: Provide temporary openings where interior area of formwork is inaccessible for cleanout, for inspection before concrete placement, and for placement of concrete. Securely brace temporary openings and set tightly to forms to prevent loss of concrete mortar. Locate temporary openings on forms at inconspicuous locations.
- E. Edges: Chamfer exposed corners and edges 3/4 inches, unless otherwise noted, using wood, metal, PVC, or rubber chamfer strips fabricated to produce uniform smooth lines and tight edge joints.
- F. Form Ties: Factory fabricated, adjustable length, removable or snapoff metal form ties, designated to prevent from deflection, and to prevent spalling concrete surfaces upon removal.
 - 1. Unless otherwise shown, provide ties so portion remaining within concrete after removal is at least 1 1/2 inch inside concrete.
 - 2. Unless otherwise shown, provide form ties which will not leave holes larger than 1-inch diameter in concrete surface.
- G. Provisions for Other Trades: Provide openings in concrete formwork to accommodate work of other trades. Determine size and location of opening, recesses and chases from trades providing such items. Accurately place and securely support items built into forms.
- H. Cleaning and Tightening: Thoroughly clean forms and adjacent surfaces to receive concrete. Remove chips, wood, sawdust, dirt or other debris just before concrete is placed. Retighten forms after concrete placement if required to eliminate mortar leaks.
- I. Preparation of Form Surfaces:
 - 1. Coat and contact surfaces of forms with a form coating compound before reinforcement is placed.

2. Thin form coating compounds only with thinning agent of type, and in amount, and under conditions of the form coating compound manufacturer's directions. Do not allow excess form coating material to accumulate in the forms or to come into contact with concrete surfaces against which fresh concrete will be placed. Apply in compliance with manufacturer's instructions.
3. Coat steel forms with a non-staining, rust preventative form oil or otherwise protect against rusting. Rust stained formwork is not acceptable.

3.4 SHORES AND SUPPORTS

- A. Design: Comply with ACI 347 for shoring and reshoring in multistory construction, and as herein specified. Contractor shall engage the services of a professional structural engineer to design shoring and reshoring and prepare and seal drawings for shoring and reshoring. Engineer shall be registered in the state where the project is located.
- B. Reshoring: Remove shores and reshore in a planned sequence to avoid damage to partially cured concrete. Locate and provide adequate reshoring to safely support the work without excessive stress or deflection.
- C. Duration: Keep reshores in place a minimum of 15 days after placing upper tier, and longer if required, until the concrete has attained its required 28 day strength and heavy loads due to construction operations have been removed.

3.5 REMOVAL OF FORMS

- A. Non-Supporting: Formwork not supporting weight of concrete, such as sides of beams, walls, columns, and similar parts of the work, may be removed after cumulatively curing at not less than 50 degrees F for 24 hours after placing concrete, provided concrete is sufficiently hard to not be damaged by form removal operations, and provided curing and protection operations are maintained.
- B. Supporting: Formwork supporting weight of concrete, such as beam soffits, joists, slabs and other structural elements, may not be removed in less than 14 days or until concrete has attained two thirds design compressive strength at 28 days. Determine potential compressive strength of in place concrete by testing field cured specimens representative of concrete location or members.
- C. Facing Material: Form facing material may be removed 4 days after placement, only if shores and other vertical supports have been arranged to permit removal of form facing material without loosening or disturbing shores and supports.

3.6 REUSE OF FORMS

- A. Clean and repair surfaces of forms to be reused in the work. Split, frayed, delaminated or otherwise damaged form facing material will not be acceptable. Apply new form coating compound material to concrete contact form surfaces as specified for new formwork.
- B. When forms are extended for successive concrete placement, thoroughly clean surfaces, remove fins and laitance, and tighten forms to close joints. Align and secure joints to avoid offsets. Do not use "patched" forms for exposed concrete surfaces.

3.7 MISCELLANEOUS CONCRETE ITEMS

- A. Filling In: Fill in holes and openings left in concrete structures for passage of work by other trades, unless otherwise shown or directed, after work of other trades is in place.
 - 1. Mix, place and cure concrete as herein specified, to blend with in place construction. Provide other miscellaneous concrete filling shown or required to complete work.
- B. Nonshrink Grout:
 - 1. Equipment bases, and other locations noted on the structural drawings, shall be grouted with nonshrink grout.
 - 2. Exposed grout shall be the nonmetallic type.

3.8 INSTALLATION OF EMBEDDED ITEMS

- A. Place and secure anchorage devices and other embedded items required for adjoining Work that is attached to or supported by cast-in-place concrete.
 - 1. Use setting drawings, templates, diagrams, instructions, and directions furnished with items to be embedded.
 - 2. Install anchor rods, accurately located, to elevations required and complying with tolerances in Section 7.5 of ANSI/AISC 303.
 - 3. Install reglets to receive waterproofing and to receive through-wall flashings in outer face of concrete frame at exterior walls, where flashing is shown at lintels, shelf angles, and other conditions.

3.9 INSTALLATION OF VAPOR RETARDER

- A. Sheet Vapor Retarders: Place, protect, and repair sheet vapor retarder in accordance with ASTM E1643 and manufacturer's written instructions.

1. Install vapor retarder with longest dimension parallel with direction of concrete pour.
2. Face laps away from exposed direction of concrete pour.
3. Lap vapor retarder over footings and grade beams not less than 6 inches (150 mm), sealing vapor retarder to concrete.
4. Lap joints 6 inches (150 mm) and seal with manufacturer's recommended tape.
5. Terminate vapor retarder at the top of floor slabs, grade beams, and pile caps, sealing entire perimeter to floor slabs, grade beams, foundation walls, or pile caps.
6. Seal penetrations in accordance with vapor retarder manufacturer's instructions.
7. Protect vapor retarder during placement of reinforcement and concrete.
 - a. Repair damaged areas by patching with vapor retarder material, overlapping damages area by 6 inches (150 mm) on all sides, and sealing to vapor retarder.

3.10 JOINTS

- A. Construct joints true to line, with faces perpendicular to surface plane of concrete.
- B. Construction Joints: Coordinate with floor slab pattern and concrete placement sequence.
 1. Install so strength and appearance of concrete are not impaired, at locations indicated on Drawings or as approved by Architect.
 2. Place joints perpendicular to main reinforcement.
 - a. Continue reinforcement across construction joints unless otherwise indicated.
 - b. Do not continue reinforcement through sides of strip placements of floors and slabs.
 3. Form keyed joints as indicated. Embed keys at least 1-1/2 inches (38 mm) into concrete.
 4. Locate joints for beams, slabs, joists, and girders at third points of spans. Offset joints in girders a minimum distance of twice the beam width from a beam-girder intersection.
 5. Locate horizontal joints in walls and columns at underside of floors, slabs, beams, and girders and at the top of footings or floor slabs.
 6. Space vertical joints in walls at 25-feet maximum. Unless otherwise indicated on Drawings, locate vertical joints beside piers integral with walls, near corners, and in concealed locations where possible.
 7. Use a bonding agent at locations where fresh concrete is placed against hardened or partially hardened concrete surfaces.

- C. Control Joints in Slabs-on-Ground: Form weakened-plane control joints, sectioning concrete into areas as indicated. Construct control joints for a depth equal to at least one-fourth of concrete thickness as follows:
 - 1. Sawed Joints: Form control joints with power saws equipped with shatterproof abrasive or diamond-rimmed blades. Cut 1/8-inch- (3.2-mm-) wide joints into concrete when cutting action does not tear, abrade, or otherwise damage surface and before concrete develops random cracks.
- D. Isolation Joints in Slabs-on-Ground: After removing formwork, install joint-filler strips at slab junctions with vertical surfaces, such as column pedestals, foundation walls, grade beams, and other locations, as indicated.
 - 1. Extend joint-filler strips full width and depth of joint, terminating flush with finished concrete surface unless otherwise indicated on Drawings.
 - 2. Terminate full-width joint-filler strips not less than 1/2 inch (13 mm) or more than 1 inch (25 mm) below finished concrete surface, where joint sealants, specified in Section 079200 "Joint Sealants," are indicated.
 - 3. Install joint-filler strips in lengths as long as practicable. Where more than one length is required, lace or clip sections together.
- E. Doweled Joints:
 - 1. Install dowel bars and support assemblies at joints where indicated on Drawings.
 - 2. Lubricate or asphalt coat one-half of dowel bar length to prevent concrete bonding to one side of joint.
- F. Waterstops:
 - 1. Provide waterstops in construction joints as shown on the drawings. Install waterstops to form a continuous diaphragm in each joint. Make provisions to support and protect waterstops during the progress of the work. Fabricate field joints in waterstops in accordance with manufacturer's printed instructions. Protect waterstop material from damage where it protrudes from any point.

3.11 CONCRETE PLACEMENT

- A. General: Comply with ACI 304, and as herein specified
- B. Before placing concrete, verify that installation of formwork, reinforcement, embedded items, and vapor retarder is complete and that required inspections are completed.
 - 1. Immediately prior to concrete placement, inspect vapor retarder for damage and deficient installation, and repair defective areas.
 - 2. Provide continuous inspection of vapor retarder during concrete placement and make necessary repairs to damaged areas as Work progresses.

- C. Notify Architect and testing and inspection agencies 24 hours prior to commencement of concrete placement.
- D. Do not add water to concrete during delivery, at Project site, or during placement unless approved by Architect in writing, but not to exceed the amount indicated on the concrete delivery ticket.
 - 1. Do not add water to concrete after adding high-range water-reducing admixtures to mixture.
- E. Deposit concrete continuously in one layer or in horizontal layers of such thickness that no new concrete is placed on concrete that has hardened enough to cause seams or planes of weakness.
 - 1. If a section cannot be placed continuously, provide construction joints as indicated.
 - 2. Deposit concrete to avoid segregation.
 - 3. Deposit concrete in horizontal layers of depth not to exceed formwork design pressures and in a manner to avoid inclined construction joints.
 - 4. Consolidate placed concrete with mechanical vibrating equipment in accordance with ACI 301 (ACI 301M).
 - a. Do not use vibrators to transport concrete inside forms.
 - b. Insert and withdraw vibrators vertically at uniformly spaced locations to rapidly penetrate placed layer and at least 6 inches (150 mm) into preceding layer.
 - c. Do not insert vibrators into lower layers of concrete that have begun to lose plasticity.
 - d. At each insertion, limit duration of vibration to time necessary to consolidate concrete, and complete embedment of reinforcement and other embedded items without causing mixture constituents to segregate.
- F. Deposit and consolidate concrete for floors and slabs in a continuous operation, within limits of construction joints, until placement of a panel or section is complete.
 - 1. Do not place concrete floors and slabs in a checkerboard sequence.
 - 2. Consolidate concrete during placement operations, so concrete is thoroughly worked around reinforcement and other embedded items and into corners.
 - 3. Maintain reinforcement in position on chairs during concrete placement.
 - 4. Screed slab surfaces with a straightedge and strike off to correct elevations.
 - 5. Level concrete, cut high areas, and fill low areas.
 - 6. Slope surfaces uniformly to drains where required.
 - 7. Begin initial floating using bull floats or darbies to form a uniform and open-textured surface plane, before excess bleedwater appears on the surface.
 - 8. Do not further disturb slab surfaces before starting finishing operations.

3.12 FINISHING FORMED SURFACES

A. As-Cast Surface Finishes:

1. ACI 301 (ACI 301M) Surface Finish SF-1.0: As-cast concrete texture imparted by form-facing material.
 - a. Patch voids larger than 1-1/2 inches (38 mm) wide or 1/2 inch (13 mm) deep.
 - b. Remove projections larger than 1 inch (25 mm).
 - c. Tie holes require patching.
 - d. Surface Tolerance: ACI 117 (ACI 117M) Class D.
 - e. Apply to concrete surfaces not exposed to public view.
2. ACI 301 (ACI 301M) Surface Finish SF-2.0: As-cast concrete texture imparted by form-facing material, arranged in an orderly and symmetrical manner with a minimum of seams.
 - a. Patch voids larger than 3/4 inch (19 mm) wide or 1/2 inch (13 mm) deep.
 - b. Remove projections larger than 1/4 inch (6 mm).
 - c. Patch tie holes.
 - d. Surface Tolerance: ACI 117 (ACI 117M) Class B.
 - e. Locations: Apply to concrete surfaces exposed to view, or that are to be covered with a coating material applied directly to the concrete, or a covering material bonded to the concrete, such as waterproofing, damp-proofing, painting or other similar system.
3. ACI 301 (ACI 301M) Surface Finish SF-3.0:
 - a. Patch voids larger than 3/4 inch (19 mm) wide or 1/2 inch (13 mm) deep.
 - b. Remove projections larger than 1/8 inch (3 mm).
 - c. Patch tie holes.
 - d. Surface Tolerance: ACI 117 (ACI 117M) Class A.
 - e. Locations: Apply to concrete surfaces as scheduled.

B. Rubbed Finish: Apply the following to as cast surface finishes where indicated on Drawings:

1. Smooth-Rubbed Finish:
 - a. Perform no later than one day after form removal.
 - b. Moisten concrete surfaces and rub with carborundum brick or another abrasive until producing a uniform color and texture.
 - c. If sufficient cement paste cannot be drawn from the concrete by the rubbing process, use a grout made from the same cementitious materials used in the in-place concrete.

- d. Maintain required patterns or variances as shown on Drawings or to match design reference sample, field sample panels, or mockups as directed by Architect.
2. Grout-Cleaned Rubbed Finish:
 - a. Clean concrete surfaces after contiguous surfaces are completed and accessible.
 - b. Do not clean concrete surfaces as Work progresses.
 - c. Mix 1 part portland cement to 1-1/2 parts fine sand, complying with ASTM C144 or ASTM C404, by volume, with sufficient water to produce a mixture with the consistency of thick paint. Add white portland cement in amounts determined by trial patches, so color of dry grout matches adjacent surfaces.
 - d. Wet concrete surfaces.
 - e. Scrub grout into voids and remove excess grout. When grout whitens, rub surface with clean burlap, and keep surface damp by fog spray for at least 36 hours.
 - f. Maintain required patterns or variances as shown on Drawings or to match design reference sample, field sample panels, or mockups as directed by Architect.

C. Related Unformed Surfaces:

1. At tops of walls, horizontal offsets, and similar unformed surfaces adjacent to formed surfaces, strike off smooth and finish with a color and texture matching adjacent formed surfaces.
2. Continue final surface treatment of formed surfaces uniformly across adjacent unformed surfaces unless otherwise indicated.

3.13 FINISHING FLOORS AND SLABS

- A. Comply with ACI 302.1R recommendations for screeding, restraightening, and finishing operations for concrete surfaces. Do not wet concrete surfaces.
- B. Scratch Finish:
 1. While still plastic, texture concrete surface that has been screeded and bull-floated or darbied.
 2. Use stiff brushes, brooms, or rakes to produce a profile depth of 1/4 inch (6 mm) in one direction.
 3. Apply scratch finish to surfaces to receive concrete floor toppings, mortar setting beds for bonded cementitious floor finishes, and where indicated.
- C. Float Finish:

1. When bleedwater sheen has disappeared and concrete surface has stiffened sufficiently to permit operation of specific float apparatus, consolidate concrete surface with power-driven floats or by hand floating if area is small or inaccessible to power-driven floats.
2. Repeat float passes and restraightening until surface is left with a uniform, smooth, granular texture and complies with ACI 117 (ACI A117M) tolerances for conventional concrete.
3. Apply float finish to surfaces to receive trowel finish and to be covered with fluid-applied or sheet waterproofing, built-up or membrane roofing, or sand-bed terrazzo and where indicated.

D. Trowel Finish:

1. After applying float finish, apply first troweling and consolidate concrete by hand or power-driven trowel.
2. Continue troweling passes and restraighten until surface is free of trowel marks and uniform in texture and appearance.
3. Grind smooth any surface defects that would telegraph through applied coatings or floor coverings.
4. Do not add water to concrete surface.
5. Do not apply hard-troweled finish to concrete, which has a total air content greater than 3 percent.
6. Apply a trowel finish to surfaces exposed to view or to be covered with resilient flooring, carpet, ceramic or quarry tile set over a cleavage membrane, paint, or another thin-film-finish coating system and where indicated.
7. Finish surfaces to the following tolerances, in accordance with ASTM E1155 (ASTM E1155M), for a randomly trafficked floor surface:
 - a. Slabs on Ground:
 - 1) Floors less than 10,000 sq. ft.: Finish and measure surface so gap at any point between concrete surface and an unlevelled, freestanding, 10-ft.- (3.05-m-) long straightedge resting on two high spots and placed anywhere on the surface does not exceed 1/4 inch (6 mm).
 - 2) Carpet floor coverings: Specified overall values of flatness, F_F 25; and of levelness, F_L 20; with minimum local values of flatness, F_F 17; and of levelness, F_L 15.
 - 3) Thin floor coverings: Specified overall values of flatness, F_F 35; and of levelness, F_L 25; with minimum local values of flatness, F_F 24; and of levelness, F_L 17.
 - 4) Industrial floor: Specified overall values of flatness, F_F 45; and of levelness, F_L 35; with minimum local values of flatness, F_F 30; and of levelness, F_L 24.
 - 5) Polished floor: Specified Overall Value (SOV): F_F 50 and F_L 25 with minimum local value (MLV): F_F 40 and F_L 17.

- 6) Wood floor covering: Specified Overall Value (SOV): F_F 25 and F_L 20 with minimum local value (MLV): F_F 17 and F_L 15.
- b. Suspended Slabs:
- 1) Floors less than 10,000 sq. ft.: Finish and measure surface so gap at any point between concrete surface and an unlevelled, freestanding, 10-ft.- (3.05-m-) long straightedge resting on two high spots and placed anywhere on the surface does not exceed 1/4 inch (6 mm).
 - 2) Carpet floor coverings: Specified overall values of flatness, F_F 25; and of levelness, F_L 20; with minimum local values of flatness, F_F 17; and of levelness, F_L 15.
 - 3) Thin floor coverings: Specified overall values of flatness, F_F 35; and of levelness, F_L 20; with minimum local values of flatness, F_F 24; and of levelness, F_L 15.
 - 4) Industrial floor: Specified overall values of flatness, F_F 45; and of levelness, F_L 35; with minimum local values of flatness, F_F 30; and of levelness, F_L 24.
- E. Trowel and Fine-Broom Finish: Apply a first trowel finish to surfaces indicated on Drawings and where ceramic or quarry tile is to be installed by either thickset or thinset method. While concrete is still plastic, slightly scarify surface with a fine broom perpendicular to main traffic route.
1. Coordinate required final finish with Architect before application.
 2. Comply with flatness and levelness tolerances for trowel-finished floor surfaces.
- F. Broom Finish: Apply a broom finish to exterior concrete platforms, steps, ramps, and locations indicated on Drawings.
1. Immediately after float finishing, slightly roughen trafficked surface by brooming with fiber-bristle broom perpendicular to main traffic route.
 2. Coordinate required final finish with Architect before application.
- 3.14 INSTALLATION OF MISCELLANEOUS CONCRETE ITEMS
- A. Filling In:
1. Fill in holes and openings left in concrete structures after Work of other trades is in place unless otherwise indicated.
 2. Mix, place, and cure concrete, as specified, to blend with in-place construction.
 3. Provide other miscellaneous concrete filling indicated or required to complete the Work.

- B. Curbs: Provide monolithic finish to interior curbs by stripping forms while concrete is still green and by steel-troweling surfaces to a hard, dense finish with corners, intersections, and terminations slightly rounded.
- C. Equipment Bases and Foundations:
1. Coordinate sizes and locations of concrete bases with actual equipment provided.
 2. Construct concrete bases 6 inches (150 mm) high unless otherwise indicated on Drawings, and extend base not less than 6 inches (150 mm) in each direction beyond the maximum dimensions of supported equipment unless otherwise indicated on Drawings, or unless required for seismic anchor support.
 3. Minimum Compressive Strength: As indicated on Drawings at 28 days.
 4. Install dowel rods to connect concrete base to concrete floor. Unless otherwise indicated, install dowel rods on 18-inch (450-mm) centers around the full perimeter of concrete base.
 5. For supported equipment, install epoxy-coated anchor bolts that extend through concrete base and anchor into structural concrete substrate.
 6. Prior to pouring concrete, place and secure anchorage devices.
 - a. Use setting drawings, templates, diagrams, instructions, and directions furnished with items to be embedded.
 - b. Cast anchor-bolt insert into bases.
 - c. Install anchor bolts to elevations required for proper attachment to supported equipment.
- D. Steel Pan Stairs: Provide concrete fill for steel pan stair treads, landings, and associated items.
1. Cast-in inserts and accessories, as shown on Drawings.
 2. Screed, tamp, and trowel finish concrete surfaces.

3.15 MASS CONCRETE

- A. This provision applies to mass concrete components exceeding the following characteristics:
1. Pile Caps – Thickness greater than or equal to 60"
 2. Columns – Section dimension greater than or equal to 36"x36" or 36" diameter
 3. Beams – Section dimensions greater than or equal to 36"x60"
- B. The mass concrete temperature after placement shall not exceed 158°F and the temperature difference between the core and exterior surfaces shall not exceed 35°F. Mass concrete should remain covered and monitored until the difference between the core temperature and the average daily ambient temperature is below 35°F. All mass

concrete pours shall remain covered and protected a minimum of 7 days unless otherwise directed by the Engineer.

- C. Submit an analysis, for review and approval, of the anticipated thermal developments in the mass concrete based on the proposed mix design, materials and casting procedures. At a minimum the analysis shall provide: an anticipated range of peak temperatures, temperature gradients, time to peak temperature and recommended cure time. The submittal shall also describe the measures and procedures that will be taken to limit the temperature differential to 35°F or less between the core and exterior surfaces.
- D. Methods for reducing thermal differential may involve but are not limited to a combination of the following:
 - 1. Selecting materials that minimize the heat generated by hydration of the cement.
 - 2. Cooling materials to reduce the temperature of the concrete in its plastic state.
 - 3. Controlling the rate of concrete placement.
 - 4. Insulating the concrete surface to prevent heat loss.
 - 5. Providing supplemental heat at the concrete surface to prevent heat loss.
 - 6. Other acceptable methods which may be developed by the Contractor.
- E. The temperature of mass concrete at the time of placement shall not be less than 40°F nor more than 75°F.
- F. The Contractor shall provide and install a minimum of six temperature sensing devices in each mass concrete pour to monitor temperature differentials between the core and exterior surfaces. These devices shall have an accuracy of $\pm 2^\circ\text{F}$ within the temperature range of 40°F to 180°F. One temperature sensing probe shall be placed near the core of the pour, and the remaining temperature sensing probes shall be placed at approximately two inches clear from the surface of the concrete furthest from the core. The Engineer shall approve the locations of the temperature sensing probes.
- G. Readings from the temperature sensing devices shall be recorded at one-hour intervals, from the time casting is complete until the maximum temperature is established. After the maximum temperature is established, record readings from temperature sensing devices at two-hour intervals until consecutive readings indicated the temperature difference between the core and all exterior surfaces is less than 35°F.
- H. If monitoring indicates the 35°F differential has been exceeded, the Contractor shall take immediate action to reduce the temperature differential to less than 35°F and revise the thermal plan to ensure future mass concrete pours meet the temperature limits. All revisions to the approved plan must be approved by the Engineer prior to implementation.

3.16 3.15 CONCRETE CURING

- A. Protect freshly placed concrete from premature drying and excessive cold or hot temperatures.
1. Comply with ACI 301 (ACI 301M) and ACI 306.1 for cold weather protection during curing.
 2. Comply with ACI 301 (ACI 301M) and ACI 305.1 (ACI 305.1M) for hot-weather protection during curing.
 3. Maintain moisture loss no more than 0.2 lb/sq. ft. x h (1 kg/sq. m x h), calculated in accordance with ACI 305.1,) before and during finishing operations.
- B. Curing Formed Surfaces: Comply with ACI 308.1 (ACI 308.1M) as follows:
1. Cure formed concrete surfaces, including underside of beams, supported slabs, and other similar surfaces.
 2. Cure concrete containing color pigments in accordance with color pigment manufacturer's instructions.
 3. If forms remain during curing period, moist cure after loosening forms.
 4. If removing forms before end of curing period, continue curing for remainder of curing period, as follows:
 - a. Continuous Fogging: Maintain standing water on concrete surface until final setting of concrete.
 - b. Continuous Sprinkling: Maintain concrete surface continuously wet.
 - c. Absorptive Cover: Pre-dampen absorptive material before application; apply additional water to absorptive material to maintain concrete surface continuously wet.
 - d. Water-Retention Sheeting Materials: Cover exposed concrete surfaces with sheeting material, taping, or lapping seams.
 - e. Membrane-Forming Curing Compound: Apply uniformly in continuous operation by power spray or roller in accordance with manufacturer's written instructions.
 - 1) Recoat areas subject to heavy rainfall within three hours after initial application.
 - 2) Maintain continuity of coating and repair damage during curing period.
- C. Curing Unformed Surfaces: Comply with ACI 308.1 (ACI 308.1M) as follows:
1. Begin curing immediately after finishing concrete.
 2. Interior Concrete Floors:

- a. Floors to Receive Floor Coverings Specified in Other Sections: Contractor has option of the following:
 - 1) Absorptive Cover: As soon as concrete has sufficient set to permit application without marring concrete surface, install prewetted absorptive cover over entire area of floor.
 - a) Lap edges and ends of absorptive cover not less than 12-inches (300-mm).
 - b) Maintain absorptive cover water saturated, and in place, for duration of curing period, but not less than seven days.
 - 2) Moisture-Retaining-Cover Curing: Cover concrete surfaces with moisture-retaining cover for curing concrete, placed in widest practicable width, with sides and ends lapped at least 12 inches (300 mm), and sealed by waterproof tape or adhesive.
 - a) Immediately repair any holes or tears during curing period, using cover material and waterproof tape.
 - b) Cure for not less than seven days.
 - 3) Ponding or Continuous Sprinkling of Water: Maintain concrete surfaces continuously wet for not less than seven days, utilizing one, or a combination of, the following:
 - a) Water.
 - b) Continuous water-fog spray.
- b. Floors to Receive Penetrating Liquid Floor Treatments: Contractor has option of the following:
 - 1) Absorptive Cover: As soon as concrete has sufficient set to permit application without marring concrete surface, install prewetted absorptive cover over entire area of floor.
 - a) Lap edges and ends of absorptive cover not less than 12 inches (300 mm).
 - b) Maintain absorptive cover water saturated, and in place, for duration of curing period, but not less than seven days.
 - 2) Moisture-Retaining-Cover Curing: Cover concrete surfaces with moisture-retaining cover for curing concrete, placed in widest practicable width, with sides and ends lapped at least 12 inches (300 mm), and sealed by waterproof tape or adhesive.

- a) Immediately repair any holes or tears during curing period, using cover material and waterproof tape.
 - b) Cure for not less than seven days.
- 3) Ponding or Continuous Sprinkling of Water: Maintain concrete surfaces continuously wet for not less than seven days, utilizing one, or a combination of, the following:
- a) Water.
 - b) Continuous water-fog spray.
- c. Floors to Receive Polished Finish: Contractor has option of the following:
- 1) Absorptive Cover: As soon as concrete has sufficient set to permit application without marring concrete surface, install prewetted absorptive cover over entire area of floor.
 - a) Lap edges and ends of absorptive cover not less than 12 inches (300 mm).
 - b) Maintain absorptive cover water saturated, and in place, for duration of curing period, but not less than seven days.
 - 2) Ponding or Continuous Sprinkling of Water: Maintain concrete surfaces continuously wet for not less than seven days, utilizing one, or a combination of, the following:
 - a) Water.
 - b) Continuous water-fog spray.
- d. Floors to Receive Chemical Stain:
- 1) As soon as concrete has sufficient set to permit application without marring concrete surface, install curing paper over entire area of floor.
 - 2) Install curing paper square to building lines, without wrinkles, and in a single length without end joints.
 - 3) Butt sides of curing paper tight; do not overlap sides of curing paper.
 - 4) Leave curing paper in place for duration of curing period, but not less than 28 days.
- e. Floors to Receive Urethane Flooring:
- 1) As soon as concrete has sufficient set to permit application without marring concrete surface, install prewetted absorptive cover over entire area of floor.

- 2) Rewet absorptive cover, and cover immediately with polyethylene moisture-retaining cover with edges lapped 6 inches (150 mm) and sealed in place.
- 3) Secure polyethylene moisture-retaining cover in place to prohibit air from circulating under polyethylene moisture-retaining cover.
- 4) Leave absorptive cover and polyethylene moisture-retaining cover in place for duration of curing period, but not less than 28 days.

f. Floors to Receive Curing and Sealing Compound:

- 1) Apply uniformly to floors and slabs indicated in a continuous operation by power spray or roller in accordance with manufacturer's written instructions.
- 2) Recoat areas subjected to heavy rainfall within three hours after initial application.
- 3) Repeat process 24 hours later, and apply a second coat. Maintain continuity of coating, and repair damage during curing period.

3.17 3.16 TOLERANCES

- A. Conform to ACI 117 (ACI 117M).

3.18 3.17 APPLICATION OF LIQUID FLOOR TREATMENTS

- A. Penetrating Liquid Floor Treatment: Prepare, apply, and finish penetrating liquid floor treatment in accordance with manufacturer's written instructions.
1. Remove curing compounds, sealers, oil, dirt, laitance, and other contaminants and complete surface repairs.
 2. Do not apply to concrete that is less than 14 days' old.
 3. Apply liquid until surface is saturated, scrubbing into surface until a gel forms; rewet; and repeat brooming or scrubbing.
 4. Rinse with water; remove excess material until surface is dry.
 5. Apply a second coat in a similar manner if surface is rough or porous.
- B. Sealing Coat: Uniformly apply a continuous sealing coat of curing and sealing compound to hardened concrete by power spray or roller in accordance with manufacturer's written instructions.

3.19 3.18 CONCRETE SURFACE REPAIRS

- A. Defective Concrete:

1. Repair and patch defective areas when approved by Architect-Engineer.
 2. Remove and replace concrete that cannot be repaired and patched to Architect's approval.
- B. Patching Mortar: A proprietary bonding agent, repair mortars, and adhesives may be required, at no extra cost to the Owner to permit patching in lieu of removal and replacement of the defective area.
- C. Repairing Formed Surfaces: Surface defects include color and texture irregularities, cracks, spalls, air bubbles, honeycombs, rock pockets, fins and other projections on the surface, and stains and other discolorations that cannot be removed by cleaning.
1. Immediately after form removal, cut out honeycombs, rock pockets, and voids more than 1/4 inch (13 mm) in any dimension to solid concrete.
 - a. Limit cut depth to 1 inch (19 mm).
 - b. Make edges of cuts perpendicular to concrete surface.
 - c. Clean, dampen with water, and brush-coat holes and voids with bonding agent.
 - d. Fill and compact with patching mortar before bonding agent has dried.
 - e. Fill form-tie voids with patching mortar or cone plugs secured in place with bonding agent.
 2. Repair defects on surfaces exposed to view by blending white portland cement and standard portland cement, so that, when dry, patching mortar matches surrounding color.
 - a. Patch a test area at inconspicuous locations to verify mixture and color match before proceeding with patching.
 - b. Compact mortar in place and strike off slightly higher than surrounding surface.
 3. Repair defects on concealed formed surfaces that will affect concrete's durability and structural performance as determined by Architect-Engineer.
- D. Repairing Unformed Surfaces:
1. Test unformed surfaces, such as floors and slabs, for finish, and verify surface tolerances specified for each surface.
 - a. Correct low and high areas.
 - b. Test surfaces sloped to drain for trueness of slope and smoothness; use a sloped template.
 2. Repair finished surfaces containing surface defects, including spalls, popouts, honeycombs, rock pockets, crazing, and cracks in excess of 0.01 inch (0.25 mm)

- wide or that penetrate to reinforcement or completely through unreinforced sections regardless of width, and other objectionable conditions.
3. After concrete has cured at least 14 days, correct high areas by grinding.
 4. Correct localized low areas during, or immediately after, completing surface-finishing operations by cutting out low areas and replacing with patching mortar.
 - a. Finish repaired areas to blend into adjacent concrete.
 5. Correct other low areas scheduled to receive floor coverings with a repair underlayment.
 - a. Prepare, mix, and apply repair underlayment and primer in accordance with manufacturer's written instructions to produce a smooth, uniform, plane, and level surface.
 - b. Feather edges to match adjacent floor elevations.
 6. Correct other low areas scheduled to remain exposed with repair topping.
 - a. Cut out low areas to ensure a minimum repair topping depth of 1/4 inch (6 mm) to match adjacent floor elevations.
 - b. Prepare, mix, and apply repair topping and primer in accordance with manufacturer's written instructions to produce a smooth, uniform, plane, and level surface.
 7. Repair defective areas, except random cracks and single holes 1 inch (25 mm) or less in diameter, by cutting out and replacing with fresh concrete.
 - a. Remove defective areas with clean, square cuts, and expose steel reinforcement with at least a 3/4-inch (19-mm) clearance all around.
 - b. Dampen concrete surfaces in contact with patching concrete and apply bonding agent.
 - c. Mix patching concrete of same materials and mixture as original concrete, except without coarse aggregate.
 - d. Place, compact, and finish to blend with adjacent finished concrete.
 - e. Cure in same manner as adjacent concrete.
 8. Repair random cracks and single holes 1 inch (25 mm) or less in diameter with patching mortar.
 - a. Groove top of cracks and cut out holes to sound concrete, and clean off dust, dirt, and loose particles.
 - b. Dampen cleaned concrete surfaces and apply bonding agent.
 - c. Place patching mortar before bonding agent has dried.
 - d. Compact patching mortar and finish to match adjacent concrete.
 - e. Keep patched area continuously moist for at least 72 hours.

- E. Perform structural repairs of concrete, subject to Architect's approval, using epoxy adhesive and patching mortar.
- F. Repair materials and installation not specified above may be used, subject to Architect's approval.

3.20 3.19 FIELD QUALITY CONTROL

- A. Special Inspections: Owner will engage a special inspector to perform field tests and inspections and prepare testing and inspection reports.
- B. Batch Tickets: For each load delivered, submit three copies of batch delivery ticket to testing agency, indicating quantity, mix identification, admixtures, design strength, aggregate size, design air content, design slump at time of batching, and amount of water that can be added at Project site.
- C. Inspections:
 - 1. Headed bolts and studs.
 - 2. Verification of use of required design mixture.
 - 3. Concrete placement, including conveying and depositing.
 - 4. Curing procedures and maintenance of curing temperature.
 - 5. Verification of concrete strength before removal of shores and forms from beams and slabs.
 - 6. Batch Plant Inspections: On a random basis, as determined by Architect.
 - 7. See Special Inspections on Drawings for additional information.
- D. Concrete Tests: Testing of composite samples of fresh concrete obtained in accordance with ASTM C 172/C 172M shall be performed in accordance with the following requirements:
 - 1. Testing Frequency: For preparing composite samples for strength test specimens of each concrete mixture placed each day shall be taken as follows:
 - a. At least once a day, nor less than.
 - b. At least once for each 150 cubic yards of each class placed each day, nor less than.
 - c. At least once for each 5,000 square feet of surface area for slabs or walls.
 - d. When frequency of testing provides fewer than five compressive-strength tests for each concrete mixture, testing shall be conducted from at least five randomly selected batches or from each batch if fewer than five are used.
 - 2. Slump: ASTM C143/C143M:

- a. One test at point of placement for each composite sample, but not less than as indicated on "Testing Frequency" paragraph 3.18.D.1.
 - b. Perform additional tests when concrete consistency appears to change.
3. Air Content: ASTM C231/C231M pressure method, for normal-weight concrete; ASTM C173/C173M volumetric method, for structural lightweight concrete.
 - a. One test for each composite sample, but not less than as indicated on "Testing Frequency" paragraph 3.18.D.1.
 4. Concrete Temperature: ASTM C1064/C1064M:
 - a. One test hourly when air temperature is 40 deg F (4.4 deg C) and below or 80 deg F (27 deg C) and above, and one test for each composite sample.
 5. Unit Weight: ASTM C567/C567M fresh unit weight of structural lightweight concrete.
 - a. One test for each composite sample, but not less than one test for each day's pour of each concrete mixture.
 6. Compression Test Specimens: ASTM C31/C31M:
 - a. Cast and store cylinder specimens for laboratory-cured and field-cured test specimens as specified in ASTM 31.
 7. Compressive-Strength Tests: ASTM C39/C39M.
 - a. Test an average of two cured specimens at seven days and one set of two specimens at 28 days.
 - b. A compressive-strength test shall be the average compressive strength from a set of two specimens obtained from same composite sample and tested at age indicated.
 8. When strength of field-cured cylinders is less than 85 percent of companion laboratory-cured cylinders, Contractor shall evaluate operations and provide corrective procedures for protecting and curing in-place concrete.
 9. Strength of each concrete mixture will be satisfactory if every average of any three consecutive compressive-strength tests equals or exceeds specified compressive strength, and no compressive-strength test value falls below specified compressive strength by more than 500 psi (3.4 MPa) if specified compressive strength is 5000 psi (34.5 MPa) or less, or no compressive strength test value is less than 10 percent of specified compressive strength if specified compressive strength is greater than 5000 psi (34.5 MPa).

10. Nondestructive Testing: Impact hammer, sonoscope, or other nondestructive device may be permitted by Architect-Engineer but will not be used as sole basis for approval or rejection of concrete.
 11. Additional Tests:
 - a. Testing and inspecting agency shall make additional tests of concrete when test results indicate that slump, air entrainment, compressive strengths, or other requirements have not been met, as directed by Architect-Engineer.
 - b. Testing and inspecting agency may conduct tests to determine adequacy of concrete by cored cylinders complying with ASTM C42/C42M or by other methods as directed by Architect-Engineer.
 - 1) Acceptance criteria for concrete strength shall be in accordance with ACI 301 (ACI 301M), section 1.6.6.3.
 12. Additional testing and inspecting, at Contractor's expense, will be performed to determine compliance of replaced or additional work with specified requirements.
 13. Correct deficiencies in the Work that test reports and inspections indicate do not comply with the Contract Documents at Contractor's expense.
- E. Measure floor and slab flatness and levelness in accordance with ASTM E1155 (ASTM E1155M) within 24 hours of completion of floor finishing and promptly report test results to Architect.

3.21 ~~3.20~~PROTECTION

- A. Protect concrete surfaces as follows:
1. Protect from petroleum stains.
 2. Diaper hydraulic equipment used over concrete surfaces.
 3. Prohibit vehicles from interior concrete slabs.
 4. Prohibit use of pipe-cutting machinery over concrete surfaces.
 5. Prohibit placement of steel items on concrete surfaces.
 6. Prohibit use of acids or acidic detergents over concrete surfaces.
 7. Protect liquid floor treatment from damage and wear during the remainder of construction period. Use protective methods and materials, including temporary covering, recommended in writing by liquid floor treatments installer.
 8. Protect concrete surfaces scheduled to receive surface hardener or polished concrete finish using Floor Slab Protective Covering.

END OF SECTION 03 30 00

SECTION 05 73 13 - GLAZED DECORATIVE METAL RAILINGS

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 post-supported railings with glass-infill panels.
- B. Related Requirements:
 - 1. Section 05 51 13 "Metal Pan Stairs" for steel tube railings associated with metal pan stairs.

1.3 DEFINITIONS

- A. Railings: Guards, handrails, and similar devices used for protection of occupants at open-sided floor and exterior deck areas and for pedestrian guidance and support, visual separation, or wall protection.

1.4 COORDINATION AND SCHEDULING

- A. Coordinate installation of anchorages for railings. 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 items to Project site in time for installation.

1.5 PREINSTALLATION MEETINGS

- A. Preinstallation Conference: Conduct conference at Project site.

1.6 ACTION SUBMITTALS

- A. Product Data:

1. Metal railings assembled from standard components.
 2. Glass products.
 3. Anchoring cement.
- B. Shop Drawings: Include plans, elevations, sections, and attachment details.
- C. Samples for Initial Selection: For products involving selection of color, texture, or design.
- D. Samples for Verification: For each type of exposed finish required.
1. Sections of each distinctly different linear railing member, including handrails, top rails, posts, and balusters.
 2. Base channel.
 3. Each type of glass and glass edge required.
 4. Fittings and brackets.
 5. Assembled Samples of railing systems, made from full-size components, including top rail, post, handrail, glass-infill panels. Show method of finishing members at intersections. Samples need not be full height.
- E. Delegated-Design Submittal: For installed products indicated to comply with performance requirements and design criteria, including analysis data signed and sealed by the qualified professional engineer responsible for their preparation.

1.7 INFORMATIONAL SUBMITTALS

- A. Qualification Data: For professional engineer or testing agency.
- B. Product Test Reports: For tests performed by a qualified testing agency, in accordance with ASTM E894, ASTM E935, ASTM E2353, and ASTM E2358.
- C. Evaluation Reports: From ICC-ES or other qualified testing agency acceptable to authorities having jurisdiction.
1. For glazed decorative metal railings.
 2. For post-installed anchors.
- D. Preconstruction test reports.

1.8 QUALITY ASSURANCE

- A. 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 for each form and finish of glass-infill panel railing consisting of two posts, top rail, handrail, glass-infill panel, and anchorage system components that are full height and are not less than 24 inches in length.
2. Subject to compliance with requirements, approved mockups may become part of the completed Work if undisturbed at time of Substantial Completion.

1.9 FIELD CONDITIONS

- A. Field Measurements: Verify actual locations of walls and other construction contiguous with railings by field measurements before fabrication and indicate measurements on Shop Drawings.

1.10 WARRANTY

- A. Manufacturer's Special Warranty for Laminated Glass: Glazed decorative metal railing manufacturer agrees to replace laminated-glass units that deteriorate within specified warranty period. Deterioration of laminated glass is defined as defects developed from normal use that are not attributed to glass breakage or to maintaining and cleaning laminated glass contrary to manufacturer's written instructions. Defects include edge separation, delamination materially obstructing vision through glass, and blemishes exceeding those allowed by referenced laminated-glass standard.
 1. Warranty Period: 10 years from date of Substantial Completion.

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. C.R. Laurence Co., Inc.; CRH Americas, Inc.
 2. Greco; CSW Industrials Inc.
 3. Julius Blum & Co., Inc.
 4. Livers Bronze Co. (**Basis of Design**)
 5. Morse Industries.
 6. TACO Metals Inc.
 7. Tuttle, a Dant Clayton Division.
 8. Wagner Companies (The); R&B Wagner, Inc.

- B. Source Limitations for Laminated Glass: Obtain from single source from single manufacturer.
- C. Source Limitations for Decorative Metal Railing Components: Obtain from single source from single manufacturer for each component and installation method.
- D. Product Options: Information on Drawings and in the Specifications establishes requirements for railing system's aesthetic effects and performance characteristics. Aesthetic effects are indicated by dimensions, arrangements, alignment, and profiles of components and assemblies as they relate to sightlines, to one another, and to adjoining construction.
 - 1. Do not change intended aesthetic effects, as judged solely by Architect, except with Architect's approval. If changes are proposed, submit comprehensive explanatory data to Architect for review.

2.2 PERFORMANCE REQUIREMENTS

- A. Delegated Design: Engage a qualified professional engineer, as defined in Section 01 40 00 "Quality Requirements," to design glazed decorative metal railings, including attachment to building construction.
- B. General: In engineering railings to withstand structural loads indicated, determine allowable design working stresses of railing materials based on the following:
 - 1. Stainless Steel: 60 percent of minimum yield strength.
 - 2. Steel: 72 percent of minimum yield strength.
 - 3. Glass: 25 percent of mean modulus of rupture (50 percent probability of breakage), as listed in "Mechanical Properties" in AAMA CW-12, "Structural Properties of Glass."
- C. Structural Performance: Railings, including attachment to building construction, shall withstand the effects of gravity loads and the following loads and stresses within limits and under conditions indicated:
 - 1. Handrails and Top Rails of Guards:
 - a. Uniform load of 50 lbf/ft. applied in any direction.
 - b. Concentrated load of 200 lbf applied in any direction.
 - c. Uniform and concentrated loads need not be assumed to act concurrently.
 - 2. Glass-Infill Panels:
 - a. Concentrated load of 50 lbf applied horizontally on an area of 1 sq. ft..
 - b. Infill load and other loads need not be assumed to act concurrently.

D. Thermal Movements: Allow for thermal movements from ambient and surface temperature changes.

1. Temperature Change: 120 deg F, ambient; 180 deg F, material surfaces.

2.3 METALS, GENERAL

A. Metal Surfaces, General: Provide materials with smooth surfaces, without seam marks, roller marks, rolled trade names, stains, discolorations, or blemishes.

B. Brackets, Flanges, and Anchors: Same metal and finish as supported rails unless otherwise indicated.

2.4 STAINLESS STEEL

A. Tubing: ASTM A554, Grade MT 304.

B. Pipe: ASTM A312/A312M, Grade TP 304.

C. Castings: ASTM A743/A743M, Grade CF 8 or Grade CF 20.

D. Sheet, Strip, Plate, and Flat Bar: ASTM A666 or ASTM A240/A240M, Type 304.

E. Bars and Shapes: ASTM A276, Type 304.

2.5 GLASS AND GLAZING PRODUCTS, GENERAL

A. Glazing Publications: Comply with written instructions 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.

B. Safety Glazing: Glazing shall comply with 16 CFR 1201, Category II.

C. Safety Glazing Labeling: Permanently mark glass 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.

D. Fully Tempered Float Glass: ASTM C1048, Kind FT (fully tempered), Condition A (uncoated) unless otherwise indicated, Type I, Class 1 (clear), Class 1 and low-iron clear, or Class 2 (tinted) as indicated, Quality-Q3.

- E. Glazing Gaskets for Glass-Infill Panels: Glazing gaskets and related accessories as recommended or supplied by railing manufacturer for installing glass-infill panels in post-supported railings.

2.6 GLASS HANDRAILS AND GUARDS

- A. Tempered Glass Handrails and Guards: Provide products that have been tested for surface and edge compression in accordance with ASTM C1048 and for impact strength in accordance with 16 CFR 1201 for Category II materials.
 - 1. Glass Color: **See Finish Legend.**
 - 2. Thickness for Glass-Infill Panels: As required by structural loads, but not less than 6.0 mm.
- B. Laminated Glass Handrails and Guards: ASTM C1172, Type II with two plies of glass bonded together by an interlayer.
 - 1. Construction: Laminate glass with polyvinyl butyral interlayer or ionoplast polymer interlayer to comply with interlayer manufacturer's written instructions.
 - 2. Interlayer Thickness: 0.030 inch.
 - 3. Kind: LT (laminated tempered).
 - 4. Glass Color: To match Tempered Glass.

2.7 FASTENERS

- A. Fastener Materials: Unless otherwise indicated, provide the following:
 - 1. Stainless Steel Components: Type 304 stainless steel fasteners.
 - 2. Dissimilar Metals: Type 304 stainless steel fasteners.
- B. Fasteners for Anchoring to Other Construction: Select fasteners of type, grade, and class required to produce connections suitable for anchoring railings to other types of construction indicated and capable of withstanding design loads.
- C. Provide concealed fasteners for interconnecting railing components and for attaching railings to other work unless exposed fasteners are unavoidable or exposed fasteners are the standard fastening method for railings indicated.
 - 1. Provide tamper-resistant flat-head machine screws for exposed fasteners unless otherwise indicated.
- D. Post-Installed Anchors: Fastener systems with working capacity greater than or equal to design load, in accordance with an evaluation report acceptable to authorities having jurisdiction, based on ICC-ES AC193 or ICC-ES AC308.

1. Material for Interior Locations: Carbon-steel components zinc plated to comply with ASTM B633 or ASTM F1941/ASTM F1941M, Class Fe/Zn 5, unless otherwise indicated.
2. Material for Exterior Locations and Where Stainless Steel Is Indicated: Alloy Group 1 stainless steel bolts, ASTM F593, and nuts; ASTM F594.

2.8 MISCELLANEOUS MATERIALS

- A. Handrail Brackets: Cast stainless steel, center of rail from face of structural glass balusters.
- B. Nonshrink, Nonmetallic Grout: Factory-packaged, nonstaining, noncorrosive, nongaseous grout complying with ASTM C1107/C1107M. Provide grout specifically recommended by manufacturer for interior and exterior applications.
- C. Anchoring Cement: Factory-packaged, nonshrink, nonstaining, hydraulic-controlled expansion cement formulation for mixing with water at Project site to create pourable anchoring, patching, and grouting compound.

2.9 FABRICATION OF METAL RAILINGS

- A. Fabricate railings to comply with requirements indicated for design, dimensions, member sizes and spacing, details, finish, and anchorage, but not less than that required to support structural loads.
- B. Assemble railings in the shop to greatest extent possible to minimize field splicing and assembly. Disassemble units only as necessary for shipping and handling limitations. Clearly mark units for reassembly and coordinated installation. Use connections that maintain structural value of joined pieces.
- C. Cut, drill, and punch metals cleanly and accurately. Remove burrs and ease edges to a radius of approximately 1/32 inch unless otherwise indicated. Remove sharp or rough areas on exposed surfaces.
- D. Form work true to line and level with accurate angles and surfaces.
- E. Fabricate connections that will be exposed to weather in a manner to exclude water. Provide weep holes where water may accumulate. Locate weep holes in inconspicuous locations.
- F. Cut, reinforce, drill, and tap as indicated to receive finish hardware, screws, and similar items.
- G. Mechanical Connections: Connect members with concealed mechanical fasteners and fittings. Fabricate members and fittings to produce flush, smooth, rigid, hairline joints.

1. Fabricate splice joints for field connection using an epoxy structural adhesive if this is manufacturer's standard splicing method.
 - H. Form changes in direction as follows:
 1. By flush bends or by inserting prefabricated flush-elbow fittings.
 2. By bending to smallest radius that will not result in distortion of railing member.
 - I. Bend members in jigs to produce uniform curvature for each configuration required; maintain cross section of member throughout entire bend without buckling, twisting, cracking, or otherwise deforming exposed surfaces of components.
 - J. Close exposed ends of hollow railing members with prefabricated end fittings.
 - K. Brackets, Flanges, Fittings, and Anchors: Provide wall brackets, flanges, handrail brackets, miscellaneous fittings, and anchors to interconnect railing members to other work where indicated.
 1. At brackets and fittings fastened to plaster or gypsum board partitions, provide crush-resistant fillers, or other means to transfer loads through wall finishes to structural supports and to prevent bracket or fitting rotation and crushing of substrate.
 - L. Provide inserts and other anchorage devices for connecting railings to concrete or masonry work. Fabricate anchorage devices capable of withstanding loads imposed by railings. Coordinate anchorage devices with supporting structure.
 - M. For railing posts set in concrete, provide stainless steel sleeves not less than 6 inches long with inside dimensions not less than 1/2 inch greater than outside dimensions of post, with metal plate forming bottom closure.
- 2.10 FABRICATION OF GLASS PANELS AND BALUSTERS
- A. Fabricate glass to sizes and shapes required; provide for proper edge clearance and bite on glazing panels.
 - B. Glass-Infill Panels: Provide tempered or laminated, tempered glass-infill panels.
 1. Edge Finish: Clean-cut or flat-grind edges to produce smooth, square edges with slight chamfers at junctions of edges and faces.
- 2.11 METAL FINISH REQUIREMENTS, GENERAL
- A. Protect mechanical finishes on exposed surfaces from damage by applying a strippable, temporary protective covering before shipment.

- B. Appearance of Finished Work: Noticeable variations in same piece are not acceptable. Variations in appearance of abutting or adjacent pieces are acceptable if they are within one-half of the range of approved Samples. 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.

2.12 STAINLESS STEEL FINISHES

- A. Surface Preparation: Remove tool and die marks and stretch lines, or blend into finish.
- B. Polished Finishes: Grind and polish surfaces to produce uniform finish, free of cross scratches.
 - 1. Run grain of directional finishes with long dimension of each piece.
 - 2. When polishing is completed, passivate and rinse surfaces. Remove embedded foreign matter and leave surfaces chemically clean.
- C. Stainless Steel Tubing Finishes:
 - 1. 180-Grit Polished Finish: Uniform, directionally textured finish.
- D. Stainless Steel Sheet, Strip, Plate, and Bar Finishes:
 - 1. Directional Satin Finish: ASTM A480/A480M, No. 4.

PART 3 - EXECUTION

3.1 INSTALLATION, GENERAL

- A. Comply with Drawings and manufacturer's written instructions for installing glazed decorative metal railings, accessories, and other components.
- B. Perform cutting, drilling, and fitting required for installing metal railings.
 - 1. Fit exposed connections together to form tight, hairline joints.
 - 2. Install railings level, plumb, square, true to line; without distortion, warp, or rack.
 - 3. Set railings accurately in location, alignment, and elevation; measured from established lines and levels.
 - 4. Do not weld, cut, or abrade surfaces of metal railing components that have been coated or finished after fabrication and that are intended for field connection by mechanical or other means without further cutting or fitting.
 - 5. Set posts plumb within a tolerance of 1/16 inch in 3 feet.

6. Align rails so variations from level for horizontal members and variations from parallel with rake of steps and ramps for sloping members do not exceed 1/4 inch in 12 feet.
- C. Control of Corrosion: Prevent galvanic action and other forms of corrosion by insulating metals and other materials from direct contact with incompatible materials.
- D. Adjust railings before anchoring to ensure matching alignment at abutting joints.
- E. Fastening to In-Place Construction: Use anchorage devices and fasteners where necessary for securing railings and for properly transferring loads to in-place construction.

3.2 METAL RAILING CONNECTIONS

A. Nonwelded Connections:

1. Use mechanical or adhesive joints for permanently connecting railing components.
2. Use wood blocks and padding to prevent damage to railing members and fittings.
3. Seal recessed holes of exposed locking screws using plastic cement filler colored to match finish of railings.

3.3 METAL ANCHORING POSTS

- A. Use steel pipe sleeves preset and anchored into concrete for installing posts. After posts have been inserted in sleeves, fill annular space between post and sleeve with nonshrink, nonmetallic grout or anchoring cement, mixed and placed to comply with anchoring material manufacturer's written instructions.
- B. Cover anchorage joint with flange of same metal as post, attached to post with setscrews.
- C. Anchor posts to metal surfaces with flanges, angle type, or floor type as required by conditions, connected to posts and to metal supporting members as follows:
 1. For stainless steel railings, weld flanges to posts and bolt to metal-supporting surfaces.

3.4 CLEANING

- A. Clean aluminum and stainless steel by washing thoroughly with water and soap, rinsing with clean water, and wiping dry.
- B. Clean and polish glass as recommended in writing by manufacturer. Wash both exposed surfaces in each area of Project not more than four days before date scheduled for inspections that establish date of Substantial Completion.

3.5 PROTECTION

- A. Protect finishes of railings from damage during construction period with temporary protective coverings approved by railing manufacturer. Remove protective coverings at time of Substantial Completion.
- B. Restore finishes damaged during installation and construction period so no evidence remains of correction work. Return items that cannot be refinished in the field to the shop; make required alterations and refinish entire unit, or provide new units.

END OF SECTION 05 73 13

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SECTION 07 42 13.23 - METAL COMPOSITE MATERIAL WALL PANELS

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Metal composite material (MCM) panels (referred to as ACM (Aluminum Composite Material) on Drawings)

1.2 DEFINITIONS

- A. DBVC: Drained and back-ventilated cavity rainscreen system designed to drain and dry water entering cavity through drainage channels, weeps, and air ventilation.
- B. MCM/: Metal composite material; cladding material formed by joining two thin metal skins to polyethylene or fire-retardant core and bonded under precise temperature, pressure, and tension.
- C. PER: Pressure-equalized rainscreen system designed for no water intrusion, with equal pressure within air cavity and outside cladding barrier.

1.3 PREINSTALLATION MEETINGS

- A. Preinstallation Conference: Conduct conference at Project site.
 - 1. Meet with Owner, Architect, Owner's insurer if applicable, MCM system Installer, MCM system manufacturer's representative, and installers whose work interfaces with or affects MCM panels, including installers of doors, windows, and louvers.
 - 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 MCM system 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 siding details, wall penetrations, openings, and condition of other construction that affect MCM system.
 - 6. Review governing regulations and requirements for insurance, certificates, and tests and inspections if applicable.

7. Review temporary protection requirements for system assembly during and after installation.
8. Review procedures for repair of 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: Include construction details, material descriptions, dimensions of individual components and profiles, and finishes for each type of panel, system, and accessory.
 1. Metal composite material (MCM) panels.
- B. Shop Drawings:
 1. Include fabrication and installation layouts of MCM system; details of edge conditions, joints, panel profiles, corners, anchorages, attachment assembly, trim, flashings, closures, accessories, and special details.
 2. Accessories: Include details of flashing, trim, and anchorage, at a scale of not less than **1-1/2 inches per 12 inches**.
 3. Provide signed and sealed drawings, by a qualified design professional in Project jurisdiction, of MCM system showing compliance with performance requirements and design criteria identified for this Project.
- C. Samples for Initial Selection: For each type of MCM panel indicated, with factory-applied color finishes.
 1. Size: Manufacturers' standard size.
 2. Include Samples of trim and accessories involving color selection.
- D. Samples for Verification: For each type of MCM panel and MCM system required, with factory-applied color finishes.
 1. MCM Panel: Two samples, Manufacturers' standard size.
- E. Delegated Design Submittals: For MCM system, including analysis data signed and sealed by the qualified professional engineer responsible for their preparation.

1.5 INFORMATIONAL SUBMITTALS

- A. Test and Evaluation Reports:

1. Product Test Reports: For each MCM system, for tests performed by qualified testing agency.
 - a. MCM Panel Manufacturer's Material Test Reports: Certified test reports showing compliance with specific performance or third-party listing documenting compliance in accordance with the IBC.
 - b. Fabricator's MCM System Test Reports: Certified test reports showing system compliance with specific performance or third-party listing documenting compliance in accordance with the IBC.
 - 1) Dry or Wet Seal System: Tested to AAMA 501.1.
 2. Preconstruction Test Reports: For MCM system.
- B. Field Quality-Control Submittals:
1. Field quality-control reports.
- C. Qualification Statements: For manufacturer, fabricator and Installer.
- D. Delegated design engineer qualifications.
- E. Sample warranties.
- 1.6 CLOSEOUT SUBMITTALS
- A. Maintenance Data: For MCM panels.
- B. Warranty Documentation:
1. Manufacturers' special warranties.
 2. Installer's special warranties.
- 1.7 QUALITY ASSURANCE
- A. Manufacturer Qualifications: Minimum 5 years' experience.
- B. Fabricator Qualifications: Approved by MCM panel manufacturer.
- C. Installer Qualifications: Fabricator of MCM system or Entity that employs installers and supervisors who are trained and approved by MCM system manufacturer.
- D. Delegated Design Engineer Qualifications: A professional engineer who is legally qualified to practice in state where Project is located and who is experienced in providing engineering services of the type indicated.
- E. Testing Agency Qualifications: An agency acceptable to authorities having jurisdiction.

1.8 MOCKUPS

- A. Build mockups to set quality standards for fabrication and installation and for preconstruction testing.
 - 1. Build mockup (approximately 900 sq. ft.- location to be determined), including corner, soffits, coping, supports, attachments, and accessories.
 - 2. Approval of mockups does not constitute approval of deviations from the Contract Documents contained in mockups unless Owner specifically approves such deviations by Change Order.
 - 3. Subject to compliance with requirements, approved mockups may become part of the completed Work if undisturbed at time of Substantial Completion.

1.9 PRECONSTRUCTION TESTING

- A. Preconstruction Testing Service: Engage a qualified testing agency to perform preconstruction testing on field mockups.
 - 1. Area and location TBD.
 - 2. Provide test specimens and assemblies representative of proposed materials and construction.
 - 3. Build laboratory mockups at testing agency facility; use personnel, materials, and methods of construction that will be used at Project site.
 - 4. Notify Architect seven days in advance of dates and times when laboratory mockups will be tested.
- B. Preconstruction Testing: Performed by a qualified testing agency on manufacturer's standard assemblies.
 - 1. Water-Spray Test: Conduct water-spray test of mockup of MCM system, testing for water penetration in accordance with AAMA 501.2.

1.10 DELIVERY, STORAGE, AND HANDLING

- A. Deliver components, MCM panels, and other manufactured items so as not to be damaged or deformed. Package MCM panels for protection during transportation and handling.
- B. Unload, store, and erect MCM panels in a manner to prevent bending, warping, twisting, and surface damage.
- C. Stack MCM panels horizontally on platforms or pallets, covered with suitable weathertight and ventilated covering. Store MCM panels to ensure dryness, with

positive slope for drainage of water. Do not store MCM panels in contact with other materials that might cause staining, denting, or other surface damage.

- D. Retain strippable protective covering on MCM panels during installation.
- E. Copper Panels: Wear gloves when handling to prevent fingerprints and soiling of surface.

1.11 FIELD CONDITIONS

- A. Weather Limitations: Proceed with installation only when existing and forecasted weather conditions permit assembly of MCM panels to be performed in accordance with manufacturers' written instructions and warranty requirements.

1.12 COORDINATION

- A. Coordinate MCM panel installation with rain drainage work, flashing, trim, construction of soffits, and other adjoining work to provide a leakproof, secure, and noncorrosive installation.

1.13 WARRANTY

- A. Panel Integrity Warranty: Manufacturer agrees to repair or replace components of MCM panels 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: Five years from date of Substantial Completion.
- B. Panel Finish Warranty: Manufacturer agrees to repair finish or replace MCM 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 in accordance with ASTM D2244.
 - b. Chalking in excess of a No. 8 rating when tested in accordance with 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.

- C. MCM System Warranty: System manufacturer's standard form in which manufacturer agrees to repair or replace components of MCM systems that fail in materials or workmanship within specified warranty period.
 - 1. Warranty Period: Five years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

- A. Delegated Design: Engage a qualified professional engineer, as defined in Section 014000 "Quality Requirements," to design MCM system.
- B. Structural Performance: MCM systems to withstand the effects of the following loads, based on testing in accordance with ASTM E330/E330M:
 - 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.
- C. Air Infiltration: Air leakage of not more than 0.06 cfm/sq. ft. when tested in accordance with ASTM E283/E283M at the following test-pressure difference:
 - 1. Test-Pressure Difference: 1.57 lbf/sq. ft..
- D. Water Penetration under Static Pressure: No water penetration when tested in accordance with ASTM E331 at the following test-pressure difference:
 - 1. Test-Pressure Difference: 2.86 lbf/sq. ft..
- E. Water Penetration under Dynamic Pressure: No water penetration when tested in accordance with AAMA 501.1 at the following test pressure:
 - 1. Test Pressure: 6.24 psf.
- F. Pressure Cycling: Provide PER system with a pass rating in accordance with AAMA 508.
 - 1. Lag between the cavity and the cyclic wind pressure to not exceed 0.08 seconds.
 - 2. Maximum differential between the cavity and the cyclic wind pressure to not exceed 50 percent of the maximum test pressure.
- G. Thermal Movements: Allow for thermal movements from ambient and surface temperature changes.

1. Temperature Change: 120 deg F, ambient; 180 deg F (100 deg C), material surfaces.
- H. Fire-Resistance Ratings: Comply with ASTM E119 or UL 263; testing by a qualified testing agency. Identify products with appropriate markings of applicable testing agency.
1. Indicate design designations from UL's "Fire Resistance Directory" or from listings of another qualified testing agency.
- I. Fire Propagation Characteristics: MCM system passes NFPA 285 testing.
- 2.2 METAL COMPOSITE MATERIAL (MCM) WALL PANELS
- A. Metal Composite Material (MCM) Wall Panels: Provide MCM panels fabricated from two metal facings bonded to a solid, extruded thermoplastic core.
1. **Manufacturers:** Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to the following:
 - a. ARCONIC ARCHITECTURAL PRODUCTS, LLC (Reynobond-Basis of Design)
 - b. ALPOLIC Materials; Mitsubishi Chemical Composites.
 - c. ALUCOBOND; 3A Composites USA, Inc.
 - d. Alcotex Inc.
 - e. Alucoil North America.
 2. Core: FR.
 3. Panel Thickness: 0.157 inch.
 4. Bond Strength: 22.5 in-lb/in. when tested for bond integrity in accordance with ASTM D1781.
 5. Fire Performance: Flame-spread index less than 25 and smoke-developed index less than 450, in accordance with ASTM E84 or UL 723.
- B. MCM Panel Materials:
1. Aluminum-Faced Panels: ASTM B209/B209M alloy as standard with manufacturer, temper as required to suit finish and forming operations 3003, H14 with 0.032-inch-thick, aluminum sheet facings.
 - a. Exterior Finish: Two-coat fluoropolymer.
 - 1) Color: See Drawing sheet for colors selection.

2.3 METAL COMPOSITE MATERIAL (MCM) SYSTEM

- A. Dry-Seal Barrier MCM System: Provide factory-formed and -assembled, MCM panels formed into profile for dry-seal barrier system installation. Include attachment assembly components, **panel stiffeners**, and accessories required for weathertight system.
 - 1. **Manufacturers:** Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to the following:
 - a. ARCONIC ARCHITECTURAL PRODUCTS, LLC (Reynobond-Basis of Design)
 - b. ALPOLIC Materials; Mitsubishi Chemical Composites.
 - c. ALUCOBOND; 3A Composites USA, Inc.
 - d. Alcotex Inc.
 - e. Alucoil North America.
 - f. Guernsey Architectural Solutions, Inc.
- B. System Panel Depth: 2-1/4 inches (57 mm) or as indicated on drawings.
- C. Attachment Assembly Components: Manufacturer's standard formed from extruded aluminum.
- D. Labeling: Comply with labeling requirement of applicable building code.

2.4 ACCESSORIES

- A. Metal Subframing and Furring: ASTM C955 cold-formed, metallic-coated steel sheet ASTM A653/A653M, G90 (Z275) hot-dip galvanized coating designation or ASTM A792/A792M, Class AZ50 (Class AZM150) aluminum-zinc-alloy coating designation unless otherwise indicated. Provide manufacturer's standard sections as required for support and alignment of MCM system.
- B. System Accessories: Provide components required for a complete, weathertight wall system including trim, copings, fasciae, mullions, sills, corner units, clips, flashings, sealants, gaskets, fillers, closure strips, and similar items. Match material and finish of MCM panels unless otherwise indicated.
- C. Flashing and Trim: Provide flashing and trim formed from same material as MCM 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 MCM panels.
- D. Panel Fasteners: Self-tapping screws designed to withstand design loads. Use gasketed or approved coated fasteners between dissimilar metals.

1. Aluminum Panels: Use aluminum or stainless steel fasteners for surfaces exposed to the exterior; use aluminum or galvanized-steel fasteners for surfaces exposed to the interior.
 2. Copper Panels: Use copper, stainless steel, or hardware-bronze fasteners.
 3. Steel, Titanium, or Zinc Panels: Use stainless steel fasteners.
 4. Provide exposed fasteners with heads matching color of MCM panels by means of plastic caps or factory-applied coating. Provide EPDM or PVC sealing washers for exposed fasteners.
- E. Panel Sealants: ASTM C920; elastomeric polyurethane or silicone sealant; of type, grade, class, and use classifications required to seal joints in MCM panels and remain weathertight; and as recommended in writing by MCM system manufacturer.

2.5 FABRICATION

- A. Fabricate and finish MCM panels at the factory, by panel manufacturer's standard procedures and processes, as necessary to fulfill indicated panel performance requirements demonstrated by laboratory testing.
- B. Shop-fabricate MCM systems and accessories by fabricator's standard procedures and processes, as necessary to fulfill indicated performance requirements demonstrated by laboratory testing. Comply with requirements of MCM panel manufacturer, of indicated system profiles, and with dimensional and structural requirements.
1. Fabricate panels to dimensions indicated on Drawings based on an assumed design temperature of 70 deg F. Allow for ambient temperature range at time of fabrication.
 2. Formed MCM panel lines, breaks, and angles to be sharp and straight, with surfaces free from warp or buckle.
 3. Fabricate panels with sharply cut edges and no displacement of face sheet or protrusion of core.
 4. Fabricated Panel Tolerances: Shop-fabricate panels to sizes and joint configurations indicated on Drawings.
 - a. Width: Plus or minus 0.079 inch at 70 deg F.
 - b. Length: Plus or minus 0.079 inch at 70 deg F.
 - c. Squareness: Plus or minus 0.079 inch at 70 deg F.
 5. Attach routed-and-returned panel flanges to perimeter extrusions or panel clips with manufacturer's standard fasteners or structural silicone adhesive.
- C. Sheet Metal Flashing and Trim: Fabricate flashing and trim to comply with manufacturer's written instructions 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.
4. Sealed Joints: Form non-expansion, 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 manufacturer.
 - a. Size: As recommended by SMACNA's "Architectural Sheet Metal Manual" or metal 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: Noticeable variations in same piece are unacceptable. 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.
- C. Coil-Coated Metal Finish:
 1. PVDF Fluoropolymer: AAMA 2605, two-coat 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.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine substrates, areas, and conditions, with Installer present, for compliance with requirements for installation tolerances, MCM system 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 MCM system 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 MCM system 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 assemblies penetrating MCM system to verify actual locations of penetrations relative to seam locations of MCM panels before installation.
- C. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION OF MCM SYSTEM

- A. General: Install MCM system in accordance with system manufacturer's written instructions in orientation, sizes, and locations indicated on Drawings. Install panels perpendicular to supports unless otherwise indicated. Anchor MCM system securely in place, with provisions for thermal and structural movement.
1. Shim or otherwise plumb substrates receiving MCM system.
 2. Flash and seal MCM system at perimeter of all openings. Fasten with self-tapping screws.
 3. Install screw fasteners in predrilled holes.
 4. Locate and space fastenings in uniform vertical and horizontal alignment.
 5. Install flashing and trim as MCM system work proceeds.
 6. Align bottoms of MCM panels and fasten with blind rivets, bolts, or self-tapping screws. Fasten flashings and trim around openings and similar elements with self-tapping screws.
 7. Provide weathertight escutcheons for all items penetrating system.
 8. Where dissimilar metals contact each other or corrosive substrates, protect against galvanic action as recommended in writing by MCM system manufacturer.
 9. Attach MCM panels to supports at locations, spacings, and with fasteners recommended by manufacturer to meet listed performance requirements.
- B. Attachment Assembly, General: Install attachment assembly required to support MCM panels and to provide a complete weathertight wall system, including tracks, drainage channels, anchor channels, perimeter extrusions, and panel clips.
1. Install subframing, furring, and other panel support members and anchorages in accordance with ASTM C955.

2. Install support system at locations, at spacings, and with fasteners recommended by MCM system manufacturer to meet listed performance requirements.
 - C. Dry-Seal MCM System: Attach MCM panels by interlocking panel **clips** into **tracks, channels, in a sequential series**.
 1. Seal horizontal and vertical joints between adjacent MCM panels with manufacturer's standard gaskets.
 - D. Install panels to allow individual panels to "free float" and be installed and removed without disturbing adjacent panels.
 - E. Install accessories with positive anchorage to building and weathertight mounting, and provide for thermal expansion. Coordinate installation with flashings and other components.
 1. Install accessory components required for a complete MCM system assembly including trim, copings, corners, seam covers, flashings, fillers, closure strips, and similar items. Provide types indicated by MCM system manufacturer.
 - F. 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 trim to fit substrates and to result in waterproof performance.
 2. Expansion Provisions: Provide for thermal expansion of exposed flashing and trim. Space movement joints at a maximum of **10 ft.** with no joints allowed within **24 inches** 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** deep, filled with mastic sealant (concealed within joints).
- 3.3 INSTALLATION TOLERANCES
- A. Shim and align MCM panels within installed tolerance of **1/4 inch in 20 ft.**, non-accumulative, on level, plumb, and location lines as indicated, and within **1/8-inch** offset of adjoining faces and of alignment of matching profiles.

3.4 FIELD QUALITY CONTROL

- A. Water-Spray Test: After installation, test area of assembly as directed by Architect for water penetration in accordance with AAMA 501.2.
- B. Manufacturer's Field Service: Engage a factory-authorized service representative to test and inspect completed MCM system installation, including accessories.
- C. MCM system will be considered defective if it does not pass test and inspections.
- D. Additional tests and inspections, at Contractor's expense, are performed to determine compliance of replaced or additional work with specified requirements.
- E. Prepare test and inspection reports.

3.5 CLEANING

- A. Remove temporary protective coverings and strippable films as MCM panels are installed unless otherwise indicated in manufacturer's written installation instructions. On completion of installation, clean finished surfaces as recommended by MCM panel manufacturer. Maintain in a clean condition during construction.
- B. After installation, clear weep holes and drainage channels of obstructions, dirt, and sealant.

3.6 PROTECTION

- A. Replace MCM panels that have been damaged or have deteriorated beyond successful repair by finish touchup or similar minor repair procedures.

END OF SECTION 07 42 13.23

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Monteith Construction RFI Log									
Project Name		Curbside Improvements Phase 2			Owner		Wilmington International Airport (ILM)		
Project Address		1740 Airport Blvd			CMAR		Monteith Construction Corp.		
		Wilmington NC 28401			Engineer		RS&H		
Design Phase		Bidding							
RFI #	Status	Bid Package/Scope	Description of Request	Assigned to	Request Date	Column1	Response Date	Notes	
001	Complete	Sitework	Would it be possible for us to get CAD files for the 31A Sitework Package to assist with material & quantity take off.	RS&H	04/02/25		4/8/2025	to be included in Addendum #1	
004	Complete	Furniture	A812 - Volume 2 It was discussed that MCC would be providing all furniture for the Sheriff's Office however A812 states the furniture is owner supplied. Please confirm. If the furniture is contractor supplied and installed, please provide specifications.	RS&H	04/02/25		4/10/2025	All furniture is provided at a later date by owner	
005	Complete	Furniture	A621 - Volume 1. Please confirm B-1 and B-2 included in the FF&E legend are contractor supplied and installed.	RS&H	04/02/25		4/10/2025	All furniture is provided at a later date by owner	
006	Complete	Door Hardware	It was discussed that an Intellikey system may be desired. This is not incorporated into the plans. Please confirm this is not currently required.	RS&H	04/02/25		4/4/2025	The intelikey is out of scope for this project.	
007	Complete	Flooring	A621 - volume 1. It was discussed that B-3, stainless steel base, would be removed from the plans and replaced with wood base. Please provide an update.	RS&H	04/02/25		4/7/2025	Replacing with stainless steel base with wood base, refer to Sheet A610 in Addendum #1.	
008	Complete	Concrete	A5/S152 Volume 1 calls for "All steel encased in concrete shall be coated with the same paint system as the remainder of the canopy" and appears to point at the rebar. Please confirm no special rebar coatings are required.	RS&H	04/02/25		4/3/2025	Note is intended for structural steel. No coating on the rebar is required.	
009	Complete	Furniture	A621 - volume 1. The Vondom benches on the 2nd and 3rd floor are listed as "Power Requirement - yes". Power is not indicated on the plans. Please confirm.	RS&H	04/02/25		4/7/2025	Power is required in the floor.	
010	Complete	Terrazzo	A621 - Volume 1. What is TZ1? It is not listed in the finish legend.	RS&H	04/02/25		4/7/2025	TZ-1 to be included in Addendum #1	
011	Complete	Terrazzo	A621 - Volume 1. What is TERR? It is not listed in the finish legend.	RS&H	04/02/25		4/7/2025	on A-621	
012	Complete	Finishes	There are a lot of finishes listed in the legend that do not appear to be associated with this project. Can the finish legend be updated to only include those materials associated with this project?	RS&H	04/02/25		4/7/2025	to be revised in Addendum #1	
013	Complete	Roofing	A163 Volume 1. One fan for the elevator shaft was deleted. Can the walkpads be reduced? Can the hide-a-rail be deleted?	RS&H	04/02/25		4/4/2025	Yes, all equipment will be more than 10' from the edge so fall protection will not be required and walkpad may be reduced. Updated drawings to be included in Addendum #1	
014	Complete	Metals / Paint	2/S304 Volume 2. The 6" galvanized painted rail says see arch. in volume 1. This is not indicated on the architectural plans. Please advise.	RS&H	04/02/25		4/8/2025	The 6" galvanized painted rail has been removed from the project. Detail 2/S304 will be revised accordingly.	
017	Complete	Stucco / Framing / Canopy	D3/A503 Volume 2. This details show an 1.5" gap between the canopy and the building projection. It was discussed changing this detail to avoid a potential maintenance concern. Please advise.	RS&H	04/02/25		4/4/2025	To be included in Addendum #1	
019	Complete	All trades	Will a Geotechnical Report be issued?	MCC	04/03/25		4/3/2025	The Geotechnical Report can be found in Volume 1 Specifications - Appendix A.	
020	Complete	Roofing	A123 Volume 2 call for new metal roofing at the cupola. Please update this plan to indicate the work as NIC. Also, please include the requirements for painting the existing roof.	RS&H	04/03/25		4/4/2025	Cupola roof has been identified as NIC	
021	Complete	Stucco / Framing	B3/A502 Volume 2 calls for the stucco to continue from the outside of the building into the vestibule. We are concerned there will be the potential for leaks at this location if the stucco continues from out to inside as shown. Should the stucco terminate at the entrance and start new on the interior?	RS&H	04/03/25		4/4/2025	Yes, terminate the tabby stone at the storefront and continue on the interior	
024	Complete	Electrical	Page 2 of the bid form says to include \$50K allowance for "Electrical Hookup of section 09 05 10 Light Manipulating Material". Page 90 of the Bid Manual says \$10K, and then on page 93 it says \$50K. Please clarify which amount we should include for the allowance.	MCC	04/04/25		4/10/2025	This has been corrected in R1 - Bid Manual. Please carry \$50,000.	
025	Complete	ALL trades	Please reference the project manual page 13. Is correct, only allowing 4% markup on change orders?	MCC	04/04/25		4/10/2025	This has been revised in R1 - Bid Manual.	
026	Complete	All Trades	Can a check be provided in lieu of a bid bond?	MCC	04/04/25		4/10/2025	MCC will accept a check as bid guarantee in the amount of 5% of the base bid, lieu of a bid bond pursuant G.S 143-129.	
027	Complete	Termite Control	Is termite control required at Parking deck, Tunnel and Atrium slabs.	RS&H	04/07/25		4/10/2025	Yes per spec section 31 31 16, we will add a note to the drawings in the addendum.	
065	Complete	HVAC	Who is the controls contractor currently at the airport?	MCC	04/09/25		4/11/2025	Climatec LLC	

QUESTIONS STILL IN REVIEW

Monteith Construction RFI Log									
Project Name		Curbside Improvements Phase 2			Owner		Wilmington International Airport (ILM)		
Project Address		1740 Airport Blvd			CMAR		Monteith Construction Corp.		
		Wilmington NC 28401			Engineer		RS&H		
Design Phase		Bidding							
RFI #	Status	Bid Package/Scope	Description of Request	Assigned to	Request Date	Column1	Response Date	Notes	
002	In Review	Electrical	E-201 appears to have a callout for the work at the entry plaza however no plan reference is provided. Please confirm the work at the entry plaza is included on sheet E-305.	RS&H	04/02/25		4/8/2025	The work at the Main Lot Entry Plaza Expansion is included in Detail 1 on Sheet E-305. The callout on Sheet E-201 will be re-sized in Addendum #2	
003	In Review	Electrical	It was discussed that power would be run to the overhead sign locations on Airport Blvd. Please provide information for the electrician to properly price. Also, please confirm all electrical / low voltage requirements are still accurate form the digital signage package.	RS&H	04/02/25		4/10/2025	to be included in Addendum #2	
015	In Review	Metal Panels	A201 Volume 2. The existing building over-clad is showing insulated metal panels. Our understanding was these would be non-insulated rain screen. Please advise.	RS&H	04/02/25		4/4/2025	Product selected is an insulated metal panel	
016	In Review	Metal Panel / Waterproofing	B5/A503 Volume 2. This detail indicated the metal panel attaching directly to the existing brick. Other details on the same page indicated furring chanel and waterproofing. Please update detail.	RS&H	04/02/25		4/4/2025	To be included in Addendum #1	
018	In Review	Site Fencing	Volume 3 - drawing CS-302 - Fence at retaining wall. Notes mention decorative fence but the legend notes wooden post and cable fence. If decorative fence can you provide specifications and height.	RS&H	04/02/25			MCC to provide as-built detail to be included in Addendum #2	
022	In Review	Expansion Joint / Glass	B3/A502 Volumne 2 calls for a 3" expansion joint at the jambs of each entry door. Typically the storefront is attached to the structure at the jambs and not just at the head and sill. Please review.	RS&H	04/03/25		4/4/2025	Expansion joint to remain as the expansion is at the elevator shaft	
023	In Review	Glass	A406 Volume 2. The reference for the cut section through the entry vestibule storefront is missing. Please provide.	RS&H	04/09/25		4/10/2025	Call out to be removed	
028	In Review	Signage	Sheet GR503 - Detail A1 - Missing total Quantities and Graphic Layouts for this sign type? Please advise if this is a no-bid item.	RS&H	04/08/25				
029	In Review	Signage	Sheet GR001 has in the table (3) Three Sign types for (U1, U2, U3) however there are no construction details listed as to how its to be fabricated or placement for install? Please advise.	RS&H	04/08/25				
030	In Review	Glass	Finish schedule on sheet A610 references anodized aluminum for CW-1 and CW-2. Specification references a two coat painted system. Please confirm finish for CW-1 and CW-2	RS&H	04/09/25				
031	In Review	Glass	On Sheet A601- Door schedule door 209 shows as an SL panel type, but floor plans show a swing door. Please confirm the intended door panel type	RS&H	04/09/25				
032	In Review	Glass	Detail B5 on A306 shows what appears to be a second glazing plane. Please confirm if this is accurate. This also appears on A3/A504.	RS&H	04/09/25				
033	In Review	Plumbing/Civil	Page P111 Vol1 note 4 refereces 1" CW for pump room with continuaiton on CU-102A. No continuation is shown on CU-102A	RS&H	04/10/25				
034	In Review	Plumbing/Civil	Page P111 Vol1 note 5 refereces a SS continuation on CU-102B. Page CU-102B does not exist in the current set.	RS&H	04/10/25				
035	In Review	Plumbing/Civil	Page P111 Vol1 note 3 refereces a SS continuation on CU-002B. Page CU-002B does not exist in the current set.	RS&H	04/10/25				
036	In Review	Plumbing	Will heat tracing of CW lines be required in the parking deck?	RS&H	04/10/25				
037	In Review	Plumbing	Will off hours work be required for terminal plumbing tie-ins or distrupction	RS&H	04/10/25				
038	In Review	Electrical	Please confirm the the PRC3 vendor is not to be included in the electrical SOW	RS&H	04/10/25				
039	In Review	Mechanical	M302 Vol 2 Base - Could further clarifaicaiton be given as to the intent and construction of the 1" architectural slot between diffusers	RS&H	04/10/25				
040	In Review	Mechanical	Do the necessary valves exist to allow a localized drain of the HHW and CHWR piping or should a full system drain be expected. Is there a potential for a freeze?	RS&H	04/10/25				
041	In Review	Mechanical	Will the duct mounted heat coil replacement take place at the same time as the HHW/CHW shutdown?	RS&H	04/10/25				
042	In Review	Mechanical	Is a pre-tab report required for existing systems?	RS&H	04/10/25				
043	In Review	Electrical	What is the expectation for temporary power during the parking deck, tunnel, and canopy construction phases?	RS&H	04/10/25				
044	In Review	Steel	Volume 2 C/A421. The prefinished curved aluminum tube indiated on C3/A421 would require a painted finish due to the fabrication methods to produce this shape. Is this acceptable?	RS&H	04/11/25				
045	In Review	Steel	Addendum 1. A401 Volume 1. The bubbled areas along columen line G and C, please confirm this is striping.	RS&H	04/11/25				
046	In Review	Metal Panels	Specification section 074213.23 was added in addendum 1. Where would this specification apply? Is 074213.19 still valid?	RS&H	04/11/25				

QUESTIONS STILL IN REVIEW

047	In Review	CMU	Please provide structural details for the cmu walls / rooms at the parking lot. Wall types, reinforcing, connection to the parking deck structure.	RS&H	04/11/25			
048	In Review	CMU	Please provide detail on how the new CMU walls at the parking deck interact with the precast spandrel panels.	RS&H	04/11/25			
049	In Review	Waterproofing / Paint	What is the finish on the exterior of the cmu walls in the parking deck? Paint?	RS&H	04/11/25			
050	In Review	Caulking / Fire Stop / CMU	What is the head of wall detail at the top of the cmu walls in the parking deck?	RS&H	04/11/25			
051	In Review	Steel	Volume 1 A201 Addendum 1 calls for a 6" galvanized steel handrail at vehicular ramps typ., reference structural. Structural references the architectural drawings. Please clarify.	RS&H	04/11/25			
052	In Review	Steel / Concrete	Please confirm all bollards in the parking deck should be constructed per C1/S502.	RS&H	04/11/25			
053	In Review	Finishes	A621 Addendum 1. Please bubble all changes.	RS&H	04/11/25			
054	In Review	Mechanical	Addendum 1 M 402. Where and how should the condensing units be mounted? Ground Mount? Ceiling Mount? If ground mount, current locations should be reviewed and placed out of the way of passengers.	RS&H	04/11/25			
055	In Review	Electrical	Volume 1 / EP 211 What infrastructure is required for the 12 future EV charging stations?	RS&H	04/11/25			
056	In Review	Electrical	Volume 1 / EP401 Addendum 1. Please bubble all changes.	RS&H	04/11/25			
057	In Review	Metal Panels	Volume 2. The specifications table of contents notes a new spec section 074212.33. This should be 074212.23 we believe. If so, please see RFI 046 above.	RS&H	04/11/25			
058	In Review	Toilet Accessories	A404 Addendum 1. Please provide the locations of TA22.	RS&H	04/11/25			
059	In Review	Floor Finishes	Volume 2 / A811 addendum 1 - note A says to reference civil drawings for restroom floor slope. Please clarify.	RS&H	04/11/25			
060	In Review	Fire Sprinkler	Volume 2 FX102.2 Addendum 1. Are the sprinkler heads all base bid? Which heads are new and which are existing? Please provide design intent.	RS&H	04/11/25			
061	In Review	Low Voltage	Volume 2 T103 Addendum 2. Please confirm all work on this sheet is base bid.	RS&H	04/11/25			
062	In Review	Metal Panels	Are there Bid Packages available, where I can see where the Metal Panels I'm looking at are included?		04/11/25			
063	In Review	Metal Panels	I see two different Specification sections, 07 42 00 for Perforated Metal Wall Panels and 07 42 13.19 for Insulated Metal Wall Panels. Looking at the Drawings and Finish the Finish Legend on the Parking Deck and the Terminal I can see the locations on the Insulated Metal panels but I don't see the Perforated Metal Panels. Is there any chance they might be labeled differently from the specifications and I'm missing it?	RS&H	04/11/25			
064	In Review	Metal Panels	At the Parking deck there are to sections where Insulated Metal panels will be installed on a curved area. I have asked the Vendor (Kingspan) about how they plan to make those panels but I wanted to see if the designer of this project is anticipating those panels on the curved areas to be curved or installed in small segments (Flat)?	RS&H	04/11/25			