



Project Clydesdale - Precon

BP02

10/10/2025

Owner

BEALE INFRASTRUCTURE GROUP LLC
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CHICAGO, IL 60654

Architect

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SCOPE OF WORK 02B - TESTING AND INSPECTIONS

SCOPE OF SERVICES

TESTING AND INSPECTIONS -

03 10 00	Concrete Forming and Accessories
03 15 00	Slab on Ground Accessories
03 20 00	Concrete Reinforcing
03 62 00	Non-Shrink Grout for Sitework
DIVISION 00	Procurement and Contracting Requirements
DIVISION 01	General Requirements
DIVISION 02	Existing Conditions

The Consultant shall provide the following Services:

1. GENERAL

- 1.1. Project management and administration as required for this Scope.
- 1.2. Consultant shall comply with Campus access requirements for all employees, delivery drives, management and other personnel requiring access. Down-time, processing time, standby time and/or other efforts associated with these access requirements shall be paid by Consultant.

2. TESTING AND INSPECTIONS

- 2.1. Provide all required testing, inspections, observations, and laboratory testing as required for monitoring the mass grading operations from top soil harvesting and storage, providing observations and monitoring of cut / fill observations, observation of proof rolling of subgrades, monitoring fill depths and compaction for all fills being placed in accordance with Geotechnical report, utility trench stabilization, wall and utility back fill testing, footing stabilization, slab-on-grade stabilization, and paving sub-grade stabilization, monitoring drilled pier depths and rock bearing elevations.
- 2.2. Testing, inspections, observations, and laboratory testing as required for rammed aggregate piers, auger cast piles, drilled piers, concrete, concrete structures, slab-on-grade, walls, masonry grout, footings, paving, structural steel, structural precast grout, onsite welding, firestopping, vertical envelope, horizontal envelope, and site utilities.
- 2.3. All unit rate costs are assumed to be regular time and any overtime costs are to be approved by Contractor prior to work being initiated.
- 2.4. Field representatives shall immediately communicate test results and any non-conformances to Contractor superintendent and project manager. An electronic log of non-conformance items shall be maintained and distributed to Contractor weekly.
- 2.5. Formal reports shall be distributed according to the following schedule; from completion of service: Non-Conformance - One (1) day, Field Report - Three (3) days, Laboratory Reports - Two (2) days.

The following Services are excluded:

1. Testing of hazardous material.
2. Substation testing.
3. Cold formed metal framing testing.
4. Testing, adjusting, and balancing of mechanical systems.
5. Precast shop and fabrication inspection and testing.

SCOPE OF WORK 03A - BUILDING AND SITE CONCRETE

SCOPE OF WORK

The Subcontractor shall execute the following portion of the Work described in the Subcontract Documents, including all labor, materials, services, superintendence, and other items required to complete such portion of the Work:

BUILDING AND SITE CONCRETE - Including, but not limited to, Specification Section(s):

02 32 00	Geotechnical Investigations
03 10 00	Concrete Forming and Accessories
03 15 00	Slab on Ground Accessories
03 20 00	Concrete Reinforcing
03 45 40	Concrete Testing - Random Traffic Areas Floor Flatness And Levelness Testing
03 62 00	Non-Shrink Grout for Sitework
07 90 05	Joint Sealers
07 92 16	Interior Floor Joint Filler
32 01 17	Flexible Pavement Repair
32 01 26	Rigid Pavement Rehabilitation
32 11 23	Aggregate Base Courses
32 13 13	Concrete Paving
32 16 13	Concrete Curb and Gutter
DIVISION 00	Procurement and Contracting Requirements
DIVISION 01	General Requirements
DIVISION 02	Existing Conditions

This Work specifically includes, but is not limited to:

1. GENERAL

- 1.1. Protect adjacent finishes prior to placing concrete. Remove protection after placement of concrete and clean adjacent finishes of splatter or slurry.
- 1.2. Clean roads surrounding Project site from debris resulting from this Work, as directed by Contractor.
- 1.3. Protect rebar immediately after placement.
- 1.4. Snow, ice, and water removal while performing the Work of this Scope.
- 1.5. Hoisting and lifting required to complete the Work. Reference the Front End for personnel and material hoisting provided by Contractor, if any.
- 1.6. Remove concrete spoils and washouts weekly.
- 1.7. Temporary fall protection and safety railings on horizontal formwork at perimeter of structure and interior openings. After formwork is removed, provide, maintain, and

remove temporary railings at perimeter of structure and interior openings. Safety railings to be compliant with OSHA requirements and include toe boards and debris netting.

- 1.8. Temporary ladders and stairs for vertical access throughout structure until permanent stairs are in place.
 - 1.9. Secure material daily to ensure material does not blow off structure or around Project site.
 - 1.10. Hot weather concrete placement requirements of the Specifications and ACI guidelines.
 - 1.11. Mockups including coordination of location and removal when directed by Contractor.
 - 1.12. Layout as required. Reference Front End for layout by others.
 - 1.13. Cover and maintain holes in concrete decks and/or slabs.
 - 1.14. Traffic control including lane closures, lane closure permits, flagmen, barricades, signage, and locating pump in public right of way required to complete this scope of work.
 - 1.15. Winter conditions concrete placement requirements of the Specifications and American Concrete Institute (ACI) guidelines.
 - 1.16. Field cure box for Owner's Testing Agent for curing of concrete cylinders. Assist testing agency in moving cylinders.
 - 1.17. Reinforcing steel and post tension reinforcing in concrete Work including welding of reinforcing when required.
 - 1.18. Reveals, drips, form liners, rustification, chamfered corners, and architectural elements and details.
 - 1.19. Layout markings that will not permanently mark concrete finishes.
 - 1.20. Ensure rebar, embeds, anchor bolts, post tension cables, inserts, and splice sleeves are not displaced during concrete pours.
 - 1.21. Concrete pumping and placement as required.
 - 1.22. Install anchors, bolts, blockouts, sleeves, weeps, plates, and other items embedded in concrete. Embedded items furnished by others. Coordinate location of embedded items with others. After placement of concrete, provide detailed drawing confirming the accuracy of installation for elevation and location within twenty-four (24) hours.
2. STRUCTURAL EXCAVATION
- 2.1. Excavation is unclassified.
 - 2.2. Structural excavation, backfill, and compaction of concrete foundation elements.
 - 2.3. Excavation for thickened and/or depressed slab sections where required.

- 2.4. Upon completion of installation of concrete foundation (including footings, columns, piers, and foundation walls) backfill concrete foundation work. The work includes suitable backfill material and soil compaction, including hand labor, to comply with density and moisture content testing as required.
- 2.5. Coordinate excavation to ensure that the open excavation for each day will not exceed the amount of concrete that will be placed during the same day.

3. Piers

- 3.1. Drilling of piers to design elevation.
- 3.2. Reinforcing steel including dowel steel and associated hoisting.
- 3.3. Pumping and/or placement of piers.
- 3.4. Concrete for caissons/drilled piers.
- 3.5. Temporary safety protection of all holes and openings.
- 3.6. Forms for caissons/piers that need to be poured higher than grade. Caissons/piers will be drilled from subgrade and poured to top of drilled pier elevation to accommodate grade beams, foundation walls, and other items.
- 3.7. Center the chute and tremie trunk for placement of concrete with a fall greater than twenty feet (20'-0") unless approved by the Owner and testing agency.
- 3.8. Install anchor bolts or other embedded items (furnished by others).
- 3.9. Anchor bolts furnished by steel TP for "structural steel" and embeds furnished by PEMB Trade Partner.

4. BUILDING CONCRETE

- 4.1. Horizontal and vertical concrete Work including concrete materials, formwork, placement and finish, expansion joints, bond breakers, control joints, keyways, waterstops, and miscellaneous accessories required to complete the Work.
- 4.2. Shop Drawings showing suggested saw cut, tool locations, construction joints, and bulkheads for walls and slab-on-grade.
- 4.3. Submit detailed concrete pour schedule.
- 4.4. Foundation wall forming drawings stamped by an engineer licensed in the state where the Project is located.
- 4.5. Concrete infill at steel column isolation locations.
- 4.6. Non-shrink grout at steel base plates.
- 4.7. Fine grading and hand excavation at thickened slabs.
- 4.8. Wet cure concrete slabs to receive adhesive applied flooring. Follow Specification guidelines for all remaining slabs.
- 4.9. Utilize Moisture Mitigating Admixture in concrete slabs to receive finished flooring or roofing.

- 4.10. Protect concrete slabs that will be a finished surface. Coordinate proper floor protection with manufacturer's representatives and others installing special flooring systems.
 - 4.11. Interior mechanical and electrical pads and curbs as indicated.
 - 4.12. Insulation at foundation walls and footings.
 - 4.13. Extra concrete caused by over excavation or due to deck deflection.
 - 4.14. Pipe bollard installation including layout, block-out for installation, and concrete infill in bollard.
 - 4.15. Soil treatment at slab on grade.
 - 4.16. Shoring and reshoring as necessary for slab on metal deck.
 - 4.17. Coordination and installation of any brick anchorage systems and brick ledges.
 - 4.18. Wall bracing for backfill as required to facilitate backfill operations. Include any engineering required. Patch tie holes and bracing holes.
 - 4.19. Bulkheads as necessary to facilitate Project Schedule.
 - 4.20. Rebar splices or form savers either called for or needed for constructability purposes.
 - 4.21. Void forms as required. Temporary protection of void forms from weather.
 - 4.22. Coordinate subdrainage installation (by others) during foundations with installing trade.
 - 4.23. Temporary generators for this Work as required until temporary power is available.
5. SITE CONCRETE
- 5.1. Site concrete Work including concrete materials, formwork, placement and finish, conveyance of concrete, reinforcing steel, control joints, expansion joints, dowels, and miscellaneous accessories required to complete the Work.
 - 5.2. Concrete sidewalks, stairs, ramps, pads, retaining walls, concrete pavement, driveway entrances, and paver support paving.
 - 5.3. Concrete curb and gutter.
 - 5.4. Concrete bases for bollards, signs, light poles, and flag poles.
 - 5.5. Install steel bollards furnished by others. Provide precast bollards or bollard covers.
 - 5.6. Concrete for miscellaneous site furnishings such as, planters, benches, and recycling and trash receptacles.
 - 5.7. Trash enclosure foundation and pad.
 - 5.8. Exterior mechanical and electrical equipment pads including but not limited to, transformer pad, medical gas tank pad, other site equipment pads, or other Project-specific site concrete.

5.9. Ductbank concrete.

The following work is excluded:

1. Furnishing embeds.
2. Permanent handrails.
3. Joint sealants.
4. Subdrainage.
5. Lightweight insulating concrete for roofing.
6. Granular base below concrete.

SCOPE OF WORK 03B - PRECAST CONCRETE

SCOPE OF WORK

The Subcontractor shall execute the following portion of the Work described in the Subcontract Documents, including all labor, materials, services, superintendence, and other items required to complete such portion of the Work:

PRECAST CONCRETE - Including, but not limited to, Specification sections:

02 32 00	Geotechnical Investigations
03 41 00	Precast Structural Concrete
09 97 23	Concrete and Masonry Coatings
34500	PRECAST ARCHITECTURAL CONCRETE
DIVISION 00	Procurement and Contracting Requirements
DIVISION 01	General Requirements
DIVISION 02	Existing Conditions

This Work specifically includes, but is not limited to:

1. GENERAL

- 1.1. Submit site-specific precast erection plan two (2) weeks prior to the precast pre-installation meeting. Plan shall include all items outlined in the Precast Erection Standards located in the Safety and Health Manual.
- 1.2. Participation in the precast pre-installation meeting, mobilization and start-up meeting, and daily lift plan meeting per the Precast Erection Standards located in the Safety and Health Manual.
- 1.3. Submit to Contractor and the precast supplier (if other than this Subcontractor) a general erection sequence within two (2) weeks after execution of this Subcontract or as otherwise required by Contractor.
- 1.4. Submit to Contractor and the precast supplier (if other than this Subcontractor) a detailed erection sequence by piece mark two (2) weeks prior to the precast pre-installation meeting as part of the site-specific precast erection plan.
- 1.5. Engineering and drawings for embed, panel, or connection modifications needed onsite during erection. Coordinate with Contractor and Erector for any erection related embeds, supplemental reinforcing, etc. and as required for a safe and complete erection of the precast elements.
- 1.6. Coordinate and obtain all lane closure permits, and pay all associated fees, required to complete the Work and for delivery of precast elements to the site as scheduled and directed.
- 1.7. Submit Shop Drawings and piece tickets to meet the Project Schedule. All precast submittals shall be signed by an engineer licensed in the state where the Project is located.
- 1.8. Deliver to jobsite in accordance with the sequence defined by Contractor. Coordinate

delivery access, storage lots, shuttle drivers, and trailer drop locations with Contractor.

- 1.9. Temporary fall protection measures (including maintenance and removal) as required to meet the requirements of Contractor and OSHA regulations.
- 1.10. Subcontractor shall comply with Site campus access requirements for all employees, delivery drivers, management, and other personnel requiring access. Down time, processing time, stand-by time and/or other efforts associated with these access requirements shall be paid by and are the responsibility of the Subcontractor.
- 1.11. Multiple mobilizations to complete the Work pursuant to the schedule.

2. PRECAST

- 2.1. Precast concrete members, precast components, and connections including, but not limited to, shims, supports, anchors, kickers, tubes, and coil rods from the structure, which are required to support the precast.
- 2.2. Precast material picking points and cast in embeds must be manufactured to meet all requirements in accordance with 20 CFR 1926.704 OSHA standards. Submit the following as they relate to these standards: Statement of Conformance from the product manufacturer to these standards, evidence of the manufacturer or distributor performance testing, and evidence of traceability from the testing procedure to the manufacturer and/or batch of the product. Ensure all pick points are protected from weather, water, ice, dirt, mud, etc. for safe and efficient erection of the precast elements.
- 2.3. Temporary and permanent anchorage including, but not limited to, welding, shimming, grouting, and bolting pursuant to the Subcontract Documents and precast erection design documents. / requirements.
- 2.4. Patching of precast surfaces as required. This includes but is not limited to the following: exposed to view lifting inserts, recessed plate connections, recessed v-connectors, column connections, and damage to precast. Patching to be completed within thirty (30) calendar days of erection completion.
- 2.5. Clean/remove excess slurry or mortar, mud, or erection marks from panels.
- 2.6. Protection of adjacent surfaces during precast installation.
- 2.7. Anchorage devices, templates, and layout drawings for items to be embedded into other construction materials for precast connections. Embeds should be labeled in a way that is easily visible and that will not wear off to allow the installation by others. Drawings and embeds must be received in a timely manner to meet the Project Schedule.
- 2.8. All embedded items in precast. Place items and block-outs in precast as required by others. Submit coordination drawings, prior to final Shop Drawing approval, to all others affected by the precast.
- 2.9. Equipment necessary to complete the Work including but not limited to cranes, hoists, and scaffolding. See Front End for any hoisting provided by Contractor.



- 2.10. Temporary shoring, bracing, and deadmen of precast and removal of the same during construction. As part of the site-specific precast erection plan, submit an engineered bracing plan, which includes requirements for removal of the shores, braces, and/or deadmen. coordinate any panel leave out locations for building access as required, and return to set leave out panels as scheduled and directed.
- 2.11. Touch up field welds. Repair scratches or damaged galvanized surfaces.
- 2.12. Engineering and drawings for embed, panel, or connection modifications needed on site during erection.
- 2.13. Design to meet the Owner elected code minimum requirements.
- 2.14. Joint sealants, expansion joints, caulking, and grouting.
- 2.15. Erection of precast panels.
- 2.16. Clean exterior of building after precast and sealant is installed.

The following work is excluded:

- 1. Temporary roads and crane pads.
- 2. Crane for this scope of work.

Schedule/Quantity: The following items are requested at bid time and are for coordination only. They will not be included in the Agreement.

- 1. Lead time for Shop Drawings for embeds: _____ Weeks
- 2. Lead time for Shop Drawings for precast pieces: _____ Weeks
- 3. Lead time for delivery of embeds: _____ Weeks
- 4. Lead time for delivery of precast pieces: _____ Weeks
- 5. Pieces per day delivered assumed in Base Bid: _____ pieces per day

SCOPE OF WORK 05A - STRUCTURAL STEEL AND MISCELLANEOUS METAL

SCOPE OF WORK

The Subcontractor shall execute the following portion of the Work described in the Subcontract Documents, including all labor, materials, services, superintendence, and other items required to complete such portion of the Work:

STRUCTURAL STEEL AND MISCELLANEOUS METAL - Including, but not limited to, Specification sections:

05 12 00	Structural Steel Framing
05 21 00	Steel Joist and Steel Joist Girder Framing
05 31 00	Steel Decking
05 50 00	Metal Fabrications
05 51 00	Metal Stairs And Ramps
05 59 00	Metal Specialties
08 91 00	Louvers
09 97 13	Steel Coatings
32 39 13	Metal Bollards
DIVISION 00	Procurement and Contracting Requirements
DIVISION 01	General Requirements
DIVISION 02	Existing Conditions

This Work specifically includes, but is not limited to:

1. GENERAL

- 1.1. Subcontractor shall comply with Campus access requirements for all employees, delivery drivers, management and other personnel requiring access. Down time, processing time, stand-by time, and/or other efforts associated with these access requirements shall be paid by Subcontractor.
- 1.2. Delegated design for connection calculations and metal fabrications and miscellaneous steel, including seal of professional engineer licensed in the state where the Project is located, on Shop Drawings and calculations.
- 1.3. Coordinate requirements of the Work, including, but not limited to, reviewing of all Subcontract Documents for size and locations of openings in floor and roof framing, including support framing at openings as required by typical details.
- 1.4. Fasteners (bolts, nuts, washers, tension control fasteners, anchors, and epoxy adhesives) necessary to complete this Scope of Work.
- 1.5. Coatings and surface preparation per the Specifications.
- 1.6. Field measurements and surveying of embedded steel items (projection, concrete elevation, location, alignment, and damage), including multiple trips to Project as necessary to accomplish these tasks. Submit findings two (2) weeks prior to mobilizing for start of steel erection. Notify Contractor of any discrepancies identified among field

measurements, the Subcontract Documents, and American Institute of Steel Construction (AISC) standards.

- 1.7. Field touch up of shop finish primer, paint, and galvanizing at locations where shop finish is damaged during delivery, handling, or erection, including, but not limited to, field connection points, bolts, handrails, and hoisting pick points.
- 1.8. Clean steel of dirt, mud, dust, labels, masking tape, and piece mark identifications prior to completion of erection.
- 1.9. Lifts and any other accommodations necessary to facilitate performance of special inspections of the Work as required by the testing agency.
- 1.10. Fire extinguishers, fire watch, and burn permits for welding and cutting.
- 1.11. Core drilling and grouting of concrete for guardrail posts. Grouting at embedded post sleeves as required for level and plumb installations of guardrails installation of guardrails. Grout at exposed conditions shall meet requirements of materials designed for exterior applications.
- 1.12. Submit site-specific erection plan two (2) weeks prior to the steel erection pre-installation meeting. Plan shall include all items outlined in the Steel Erection Standards located in the Safety and Health Manual.
- 1.13. Participate in the steel erection pre-installation meeting, steel erection pre-start meeting, and daily routine meeting per the Steel Erection Standards located in the Safety and Health Manual.
- 1.14. Install connections to concrete, masonry, or other non-steel substrates where installation of steel must occur after substrate is already in place.
- 1.15. Cut holes in deck assemblies for openings identified on Subcontract Documents, when directed by Contractor.
- 1.16. Site-specific erection stability analysis, including stamped and sealed design by a professional engineer licensed in the state where the Project is located. Analysis shall include loads imposed by follow-on trades if erection is not scheduled for completion before work of other trades is scheduled to commence, per Contractor's schedule. Provide and remove temporary bracing and shoring as required for stability during erection.
- 1.17. Remove temporary erection aids, welds, run off tabs, and backing strips. Grind removal area to a flush finish at exposed steel surfaces.
- 1.18. Arrange for temporary power for welders and equipment as needed for completion of this Scope of Work and/or provide fuel powered welders and equipment. When fuel powered equipment is used, protect concrete slabs and finishes from fuel spills or leakage and properly ventilate when performing Work within confined spaces as required per OSHA guidelines.
- 1.19. Delivery of all materials and equipment to and from the project site following site guidelines outlined in Front End Documents.
- 1.20. Provide traffic control for this scope of work. Reference site access plan for traffic

- control and lane closures provided by the contractor.
- 1.21. Provide and maintain guardrail system(s) that comply with OSHA requirements.
 - 1.22. Coordination with other trades as required to complete this scope.
 - 1.23. Steel erection, including but not limited to, rigging, unloading and marshalling of materials.
 - 1.24. Slip-resistant finish on stair nosings and treads as required.
 - 1.25. Shop visual and non-destructive testing in accordance with American Welding Society (AWS) and AISC procedures.
 - 1.26. Fasteners necessary to complete this Scope of Work.
 - 1.27. Edge angles and embeds required at dock equipment per the Contract Documents.
 - 1.28. Steel framing for pan-filled stair system, including stringers, risers, treads, landing frames and rails.
 - 1.29. Steel framing for grated/checkered plate stair systems, including strings, treads, risers, landing frames and rails.
 - 1.30. Steel support framing and anchoring holes for overhead doors and overhead door operators, including coordination with others.
 - 1.31. Steel guardrail and/or handrail at steel stairs and floor openings.
 - 1.32. Exterior railings at dock and ramps where shown.
 - 1.33. Delivery of all materials and equipment to and from the project site. Verify available existing and planned site access road conditions, including but not limited to, associated requirements such as overhead power lines, available vehicle turning radius at corners/intersections and maximum load capacity of access roads. This Contractor is responsible for delivery of materials and equipment to the project site via means that will work in conjunction with available site access conditions without causing permanent damage to both on site and off site infrastructure. In the event that equipment or materials cannot be delivered to the project site based on available access constraints, supplier shall be responsible for temporary/ permanent access infrastructure modifications as required to perform delivery and any repairs made necessary as a result of modifications and, or damage caused by delivery of materials and equipment to/ from the project site. Work includes, but is not limited to, repair of damaged curbs, walks and landscaping.

2. STRUCTURAL STEEL

- 2.1. Structural steel items, including, but not limited to, beams, columns, loose bearing plates, slide bearings, anchor bolts, leveling plates, girders, metal deck, deck joists, joist reinforcing, steel trusses, shear studs, deformed bar anchors, elevator shaft separator beams, guide rails supports, machine room framing, bracing, bridging, trusses, purlins, girts, ledge angles, bent plate, and connection material for all of the previously mentioned items.
- 2.2. Furnish one template for each base plate to Contractor for use in setting anchor bolts.

- 2.3. Pour stops and closure plates as required at slab on deck locations to create a fully sealed and edge formed assembly for others.
- 2.4. Column layout and elevations, including leveling nuts and shooting shim packs. Building offset work lines and benchmarks for use by others.
- 2.5. Provide as-built survey of structural steel plumb conditions and edge of slab locations, per allowable tolerances as specified.
- 2.6. Coordinate with precast concrete supplier.

3. MISCELLANEOUS STEEL

- 3.1. Miscellaneous steel items, including, but not limited to, stairs, rails, mechanical unit opening framing, and other metal fabrications.
- 3.2. Metal grates and frames.
- 3.3. Furnish anchor bolts, lintels, brick relief, and all steel items scheduled for embedment in concrete.
- 3.4. Where embeds are required for support or connection of miscellaneous steel or structural steel items, provide embed layout drawings as necessary for proper installation by others. All embeds scheduled to be cast in place to include nail holes coordinated with Contractor's field staff.

The following work is excluded:

1. Concrete fill for pan stairs and landings.
2. Steel support and hangers for mechanical equipment, piping, and duct work, unless specifically denoted on the Structural Drawings.
3. Anchor bolts and fasteners for wood sills and nailers.
4. Masonry ties for welded connection to steel columns and beams.
5. Chain link fencing.
6. Locks/hardware associated with trash enclosure gates.
7. Pre-manufactured electrical light bollards.
8. Grout for column base plates, beam pockets, and beam bearing plates.
9. Cranes.

Unit Prices:

1. Ironworker: Straight Time: \$_____ per hour
2. Ironworker: Over time: \$_____ per hour
3. Shop Labor: \$_____ per hour
4. Delivery to site for additional fabricated miscellaneous steel: \$_____ per delivery

5. Delivery to site for additional fabricated structural steel: \$ _____ per delivery

Schedule/Quantity: The following items are requested at bid time and are for coordination only. They will not be included in the Agreement.

1. Structural Steel: _____ Tons
2. Steel Joists: _____ Tons
3. Floor Decking: _____ SF
4. Roof Decking: _____ SF
5. Steel Stair & Rails: _____ Risers
6. Number of weeks from Notice to Proceed to submission of complete Shop Drawings:
_____ Weeks
7. Number of weeks to fabricate and deliver the steel to Project site after receipt of approved or approved as noted submittals, verification forms, and a signed agreement. Duration provided shall be based upon the number of weeks necessary to deliver an adequate quantity of steel to the site to allow erection to commence and continue as indicated per the Project schedule without interruption or delay due to shortages of material on Project site: _____ Weeks
8. Number of weeks necessary to complete erection of the steel frame structure and decking from the time of receipt of steel fabrications at the Project site, and as necessary to allow all subsequent work as defined by the Project schedule to commence: _____ Weeks

SCOPE OF WORK 07A - MEMBRANE ROOFING

SCOPE OF WORK

The Subcontractor shall execute the following portion of the Work described in the Subcontract Documents, including all labor, materials, services, superintendence, and other items required to complete such portion of the Work:

MEMBRANE ROOFING - Including, but not limited to, Specification Section(s):

03 41 00	Precast Structural Concrete
07 21 00	Thermal Insulation
07 26 16	Vapor Retarder
07 50 00	Single Ply Roofing
07 62 00	Sheet Metal Flashing and Trim
07 71 00	Roof Specialties
07 72 00	Roof Accessories
09 97 23	Concrete and Masonry Coatings
DIVISION 00	Procurement and Contracting Requirements
DIVISION 01	General Requirements

This Work specifically includes, but is not limited to:

1. GENERAL

- 1.1. Subcontractor shall comply with Campus access requirements for all employees, delivery drivers, management and other personnel requiring access. Down time, processing time, stand-by time, and/or other efforts associated with these access requirements shall be paid by Subcontractor.
- 1.2. Material handling equipment and associated personnel (vertical and horizontal) to support this scope.
- 1.3. Coordinate additional requirements for lightning protection system as required by the roofing manufacturer.
- 1.4. Coordinate Work with others whose work intersects and/or passes through this Work. Detail penetrations, flash, counter flash, and waterproof penetrations.
- 1.5. Clean roof substrate and prepare surface prior to start of roofing activities.
- 1.6. Weather protection at end of each work day during progress to maintain a weathertight roof system. Prior to leaving the jobsite each day, provide notification to Contractor's superintendent if adjacent trades are incomplete.
- 1.7. Daily housekeeping and trash removal to support this scope. Including providing dumpsters.
- 1.8. Snow removal and dewatering throughout the duration of this scope.
- 1.9. Final clean of roof.

- 1.10. Participation of skin mockup with all details as directed by Contractor and the Architect to be used for visual review and testing.
- 1.11. Participate in the building skin coordination meetings including, but not limited to, pre-installation meetings, metal panel re-start meeting, and daily standdown meetings.
- 1.12. Hoisting, rigging, lifting, scaffolding, fall protection, and onsite distribution as required.
- 1.13. Delivery of all materials and equipment to and from the project site. Verify available existing and planned site access road conditions, including but not limited to, associated requirements such as overhead power lines, available vehicle turning radius at corners/intersections and maximum load capacity of access roads. This Contractor is responsible for delivery of materials and equipment to the project site via means that will work in conjunction with available site access conditions without causing permanent damage to both on site and off site infrastructure. In the event that equipment or materials cannot be delivered to the project site based on available access constraints, supplier shall be responsible for temporary/ permanent access infrastructure modifications as required to perform delivery and any repairs made necessary as a result of modifications and, or damage caused by delivery of materials and equipment to/ from the project site. Work includes, but is not limited to, repair of damaged curbs, walks and landscaping.
- 1.14. All materials on the roof shall be tied down throughout the Project until completion of roof system installations.
- 1.15. Maintain, remove, and replace temporary barricading or flagging at roof during construction in accordance with OSHA guidelines during installation of roofing systems.
- 1.16. Multiple mobilizations should be considered for the roofing including completing the main portion of the roof, tie in the parapet/temporary waterproof, sheet metal and setting MEP penetrations and curbs.
- 1.17. Coordination with other trades as required to complete this scope of work.

2. MEMBRANE ROOFING

- 2.1. Membrane roofing system including, but not limited to membrane, substrate boards, vapor retarder, underlayment, roof insulation, walkway pads, termination bars, reglets, adhesives, fasteners, and accessories necessary for a complete system.
- 2.2. Roofing to include heat welding of membrane strips and pads at lightning protection assemblies.
- 2.3. Coordinate the requirements for tapered insulation with other trades including but not limited to rooftop mounted mechanical equipment curb locations and sizes to ensure adequate minimum slope as required for a complete warranty at the completion of the project.

3. SHEETMETAL, EXPANSION CONTROL, AND ACCESSORIES

- 3.1. Roof expansion joint assemblies integral to roofing systems including roof to roof and

roof to wall joints.

- 3.2. Joint sealants necessary for a complete system.
- 3.3. Roof accessories including, but not limited to expansion joints, roof hatches, ships ladder, walk pads and safety rail system.
- 3.4. Roofing related sheet metal flashing including, but not limited to parapet coping, any flashings in-board of the parapet, gutters, scuppers, conductor heads, downspouts, splashblocks, and bird screens, including final connection to underground stub-ups.
- 3.5. Other sheet metal flashings including, but not limited to roof penetration flashing, exposed metal trim/facia units, louver sill pans, window head, and equipment support flashing.

The following work is excluded:

1. Roof curbs for mechanical units including insulation within curbs.
2. Cutting and patching of roof deck.
3. Roof deck structural inspections.
4. Stair towers for roof access.

Manufacturers and Products: The following items are requested at bid time and are for coordination only. They will not be included in the Agreement.

1. List of relevant project experience. Provide the location, name of the manufacturer, the product and product warranty representative.
2. Subcontractor shall identify all proposed tiered subcontractors (if applicable) and include project references and recommendations.
3. Quantity of crews required to meet the Construction Schedule and Sequencing Plan.
4. Quantity of employees per crew to meet the Construction Schedule and Sequencing Plan.
5. Production rates (Daily and Weekly) to meet the Construction Schedule and Sequencing Plan.
6. Required work schedules (i.e Days per Week, Hours per Day) to meet the Construction Schedule and Sequencing Plan.

SCOPE OF WORK 08C - OVERHEAD AND COILING DOORS

SCOPE OF WORK

The Subcontractor shall execute the following portion of the Work described in the Subcontract Documents, including all labor, materials, services, superintendence, and other items required to complete such portion of the Work:

OVERHEAD AND COILING DOORS - Including, but not limited to, Specification Section(s):

08 33 23 Overhead Coiling Doors
DIVISION 00 Procurement and Contracting Requirements
DIVISION 01 General Requirements
DIVISION 02 Existing Conditions

This Work specifically includes, but is not limited to:

1. GENERAL

- 1.1. Unloading and distribution of material to be installed.
- 1.2. Quantity and damage inspection of materials once delivered to the Project.

2. OVERHEAD AND COILING DOORS

- 2.1. Overhead coiling doors including, but not limited to manual/power operator, control devices, guides, hood, motors, panels, hardware, seals, fasteners, and accessories required for a complete installation.
- 2.2. Low voltage hook-up and wiring required for a complete installation.
- 2.3. Weather stripping at coiling doors.
- 2.4. Relays, internal wiring components, and release devices for connection to fire alarm system. Coordinate with fire alarm subcontractor for connections and required hardware for proper door function.
- 2.5. Final fire testing and demonstration of proper operation as required by the applicable Authority Having Jurisdiction. Include adjusting and re-setting of fire doors upon completion of testing. Pretest doors prior to inspection.
- 2.6. Factory authorized service representative to perform start-up, demonstration, and training upon completion of installation.
- 2.7. Balancing and final adjustment of installed doors.
- 2.8. Installation of masterkeyed cylinders. Materials furnished by others.
- 2.9. Track guards where indicated for this scope of work.
- 2.10. Power/controls and final terminations downstream of the power supply.

The following work is excluded:

1. Hollow metal doors and frames.
2. Wood doors and frames.
3. 120V power to doors.
4. Structural overhead support.
5. Truck Restraint system.
6. Loading dock seals and overhead rain shrouds.

SCOPE OF WORK 11A - LOADING DOCK EQUIPMENT

SCOPE OF WORK

The Subcontractor shall execute the following portion of the Work described in the Subcontract Documents, including all labor, materials, services, superintendence, and other items required to complete such portion of the Work:

LOADING DOCK EQUIPMENT - Including, but not limited to, Specification sections:

11 13 00 Loading Dock Equipment
DIVISION 00 Procurement and Contracting Requirements
DIVISION 01 General Requirements

This Work specifically includes, but is not limited to:

1. GENERAL

- 1.1. Miscellaneous clips, shims, fasteners, anchors, accessories, and adhesives as required to complete the Scope of Work.
- 1.2. Coordinate Scope of Work with others prior to beginning the Work.
- 1.3. Shop Drawings within four (4) weeks of receipt of executed Agreement.
- 1.4. Templates for rough-in requirements.

2. LOADING DOCK EQUIPMENT

- 2.1. Loading dock equipment, dock bumpers, dock lights, dock lifts, dock shelters, manual dock lifts, retractable dock enclosures, dock/door seal, and wheel locks.
- 2.2. Factory-applied finish as specified.
- 2.3. Adjust lifts six (6) months after installation.
- 2.4. Coordinate final electrical connection with others.
- 2.5. Security fasteners on equipment.
- 2.6. Furnish embeds. Installation by others.
- 2.7. Final termination into the controller.
- 2.8. Furnish red/green lights. Installation by others.

The following work is excluded:

1. Signage, unless specifically indicated.
2. Coiling and overhead doors.
3. Chain link fencing and gates.

SCOPE OF WORK 13A - PRE-ENGINEERED METAL BUILDING

SCOPE OF WORK

The Subcontractor shall execute the following portion of the Work described in the Subcontract Documents, including all labor, materials, services, superintendence, and other items required to complete such portion of the Work:

PRE-ENGINEERED METAL BUILDING - Including, but not limited to, Specification Section(s):

13 34 233	Fabricated Structures
133419	METAL BUILDING SYSTEMS
74113.16	STANDING-SEAM METAL ROOF PANELS
74213.13	FORMED METAL WALL PANELS
74213.19	INSULATED METAL WALL PANELS
76200	SHEET METAL FLASHING AND TRIM
DIVISION 00	Procurement and Contracting Requirements
DIVISION 01	General Requirements
DIVISION 02	Existing Conditions

This Work specifically includes, but is not limited to:

1. GENERAL

- 1.1. Coordinate Work with others whose work intersects and/or passes through this Work. Flash, counter flash, and waterproof penetrations.
- 1.2. Isolation strips for connection of dissimilar metals.
- 1.3. Field measurements, field verification, templates, and layout associated with this Scope of Work. Field verification shall be conducted prior to procurement of materials.
- 1.4. Delegated design of metal wall panel system.
- 1.5. Coordination, assistance, access, and equipment necessary for water/air quality testing of metal panel or roofing systems.
- 1.6. Maintain integrity of weather resistive barrier (WRB) during and after installation so no air/water/thermal breaks are present within the system as a result of penetrations created by Work of this Scope.
- 1.7. Joint sealants including sealants integral to roofing and panel systems and perimeter of panel systems to other panels and other dissimilar materials.
- 1.8. Delegated design for this Scope of Work per applicable standards and codes including signed/sealed drawings and calculations by a professional engineer registered in the state where the Project is located.
- 1.9. Building design shall incorporate the operating loads of overhead doors, mechanical equipment, electrical equipment, special overhead equipment, and other general

equipment loads to include pipes, ducts, and conduits, all supported from the steel structure above. Weights to be determined and provided to Contractor during submittal phase.

- 1.10. Building design shall include future structural design requirements for any roof mounted equipment such as exhaust fans and gravity vents, other than currently shown.
 - 1.11. Maintain erection tolerances of structural steel per applicable codes and standards.
 - 1.12. Coordinate and accommodate exterior openings associated with this Scope of Work.
 - 1.13. Coordinate with others for plumbing vents. Cut the roof deck and install flashing for penetrations compatible with the metal building.
 - 1.14. Coordinate with Owner's selected independent testing lab for testing and correct any deficiencies immediately after inspection(s).
 - 1.15. Store materials in a manner that will be secure and permit easy access for inspection and identification. Steel members must be kept off the ground and spaced by using pallets, dunnage, or other supports and spacers.
 - 1.16. Rigging/staging for building erection.
 - 1.17. Protect slab and provide any required corrective work due to damage (i.e. concrete repairs, removing stains, and excessive tread marks).
2. *METAL ROOFING*
- 2.1. Metal roofing system including but not limited to nail board, ice and water shield, joint sealants, concealed fasteners, rubber gaskets, closure pieces, ridge caps, fasteners, concealed clips, reveals, control joints, and associated copings and flashing.
 - 2.2. Metal roofing related sheet metal flashing including, but not limited to parapet coping, any flashings in-board of the parapet, gutters, scuppers, conductor heads, downspouts, splashblocks, and bird screens, including final connection to underground stub-ups.
 - 2.3. Roof expansion joint assemblies integral to roofing systems including [roof to roof and roof to wall joints.
 - 2.4. Sheet metal soffit system including but not limited to, soffit panel support framing, joint sealants, and associated flashing.
 - 2.5. Boots, seals, zip strips, and flashing required for roof penetrations.
3. *METAL WALL PANELS*
- 3.1. Metal wall panels including but not limited to, system specific support framing, girts, clip angles, joint sealants, concealed fasteners, rubber gaskets, closure pieces, specialty shapes, reveals, control joints, and associated flashing.
 - 3.2. Insulation behind metal panels with necessary z-clips, or other associated brackets and attachment hardware.
 - 3.3. Expansion joint assemblies integral or adjacent to metal wall panel system.
4. *FLASHING AND SHEETMETAL*

- 4.1. Other sheet metal flashings including, but not limited to counter flashings and reglets, thru-wall flashing, equipment support flashing, roof penetration flashing, exposed metal trim/facia units, louver sill pans and flashing, and window flashings.

5. ARCHITECTURAL LOUVERS

- 5.1. Architectural louvers.

6. PRE-ENGINEERED-METAL BUILDINGS

- 6.1. Pre-engineered metal building for a turnkey installation sized to accommodate architectural layout and structural foundations with columns, frames, purlins, roof panels, open walls as required with portal columns and wind beams, specified deflections, and associated gutters and downspouts with cover guards.
- 6.2. Exterior wall and roof insulation as indicated.
- 6.3. Interior liner panel at exterior walls and interior roof as indicated.
- 6.4. Cross bracing and coordination of such with exterior wall framing, penetrations, and openings.
- 6.5. Support or bracing required within structure and coordination of same.
- 6.6. Bracing rods at roof purlins.
- 6.7. Metal flashing and closure trim at roof edge to exterior walls.
- 6.8. Non-shrink grout at base plates as required.
- 6.9. Downspouts.
- 6.10. Furnish anchor bolts and anchor bolt template drawings for installation by others.
- 6.11. High-strength bolts, nuts, and washers, tightened as required and verified by the Owner's testing agency.
- 6.12. Field touch-up paint at locations where shop finish is damaged during delivery, handling, or erection.

The following work is excluded:

1. Membrane roofing copings, gutters, scuppers, conductor heads, and downspouts for membrane roofing.
2. Insulation defined in other scopes of work.
3. Joint sealants defined in other scopes of work.
4. Expansion control defined in other scopes of work.
5. Weather barrier system behind metal panels.
6. Mechanical system louvers.
7. In-wall blocking.
8. Final mechanical, plumbing and electrical connections.

9. Spray fireproofing.
10. Decktites for plumbing vents.
11. Setting of anchor bolts.
12. Costs for testing by an independent testing lab.
13. Central control points for layout.

SCOPE OF WORK 21A - FIRE PROTECTION - HUB AND PUMP HOUSES

SCOPE OF WORK

The Subcontractor shall execute the following portion of the Work described in the Subcontract Documents, including all labor, materials, services, superintendence, and other items required to complete such portion of the Work:

FIRE PROTECTION - HUB AND PUMP HOUSES - Including, but not limited to, Specification Section(s):

21 05 00	Common Work Results For Fire Suppression
21 08 00	Commissioning of Fire Suppression Systems
21 31 10	Fire Pump Systems
21 41 00	Glass Coated Bolted Steel Fire Water Holding Tank
210505	PROJECT CLOSEOUT FOR FIRE SUPPRESSION
211300	FIRE SUPPRESSION SPRINKLER SYSTEMS
DIVISION 00	Procurement and Contracting Requirements
DIVISION 01	General Requirements
DIVISION 02	Existing Conditions

This Work specifically includes, but is not limited to:

1. GENERAL

- 1.1. Building Information Modeling (BIM) per Front End.
- 1.2. Layout for equipment pads as required.
- 1.3. Layout for penetrations as required.
- 1.4. Layout of equipment that will require specific backing and framing.
- 1.5. Provide assistance in receiving and rigging of the fire pump house.
- 1.6. Sealing, flashing, and escutcheons for roof, wall, and floor penetrations as required for this Scope of Work.
- 1.7. Equipment mounting brackets as required.
- 1.8. Coordinate with others as required for full integration and interface of the system(s) included in the Work.
- 1.9. Core drilling including layout, structural x-rays, and temporary protection as required for this Scope of Work. Obtain written approval from Contractor before any core drilling.
- 1.10. Furnish access doors as required for this Scope of Work. Installation by others.
- 1.11. Expansion joints for piping as required.
- 1.12. Cut and install ceiling tiles as required. Ceiling tiles furnished by others.

- 1.13. Saw-cutting and patching as required for this Scope of Work.
- 1.14. Supervision at concrete pours involving penetrations and sleeves associated with this Scope of Work.

2. FIRE SPRINKLER SYSTEM

- 2.1. Flow tests to obtain hydraulic data needed for design of system.
- 2.2. Fire pump and fire pump controller.
- 2.3. Start-up strainers for fire pumps. After final acceptance, replace with final strainer.
- 2.4. Flushing and sterilization of sprinkler water lines.
- 2.5. Prefabricated Fire Pump House and Fire Water Tank.
- 2.6. Diesel fuel tank and diesel fuel tank remote fill station.
- 2.7. Fire water stub-up coordinates for site utility trade partner.
- 2.8. Site-specific stamped structural calculations for the fire pump house and tank.
- 2.9. Final testing and acceptance by Authority Having Jurisdiction.
- 2.10. Diesel fuel for startup and testing.
- 2.11. Tagging and identification for all systems.

3. COMMISSIONING

- 3.1. Commissioning assistance.
- 3.2. Qualified personnel, including manufacturer technicians, to attend all commissioning meetings.
- 3.3. Qualified personnel, including manufacturer technicians, and equipment to complete pre-functional and functional testing and trending as directed by the commissioning agent.

The following work is excluded:

1. Concrete housekeeping pads. (W/ 03A)
2. Grouting. (W/ 03A)
3. Firestopping. (W/ 07B)
4. Painting unless specifically included above. (W/ 09B)
5. Structural steel supports unless specifically included above. (W/ 05A)
6. Underground piping to flanged outlet (including flushing and testing). (W/ 31C)
7. Line voltage conduit and wire. (W/ 26A)
8. Fire extinguishers and fire extinguisher cabinets. (W/ 10A)
9. Design and installation of foundations for fire water tank. (W/ 03A)

10. Concrete slab on grade. (W/ 03A)
11. Hoisting of the fire pump house. (W/ 02C)
12. Anchoring in place of the fire pump house. (W/ 02C)

SCOPE OF WORK 23A - MECHANICAL

SCOPE OF WORK

The Subcontractor shall execute the following portion of the Work described in the Subcontract Documents, including all labor, materials, services, superintendence, and other items required to complete such portion of the Work:

MECHANICAL - Including, but not limited to, Specification Section(s):

22 05 00	Common Work Results for Plumbing
22 05 17	Sleeves And Sleeve Seals For Plumbing Piping
22 05 18	Escutcheons For Plumbing Piping
22 05 19	Meters And Gauges For Plumbing Piping
22 05 23	General Duty Valves For Plumbing Piping
22 05 29	Handers and Supports for Plumbing Piping and Equipment
22 05 48	Vibration And Seismic Controls
22 05 53	Identification for Plumbing Piping and Equipment
22 07 19	Plumbing And Piping Insulation
22 11 16	Domestic Water Piping
22 11 19	Domestic Water Piping Specialties
22 13 16	Sanitary Waste And Vent Piping
22 13 19	Sanitary Waste Piping Specialties
22 14 13	Facility Storm Drainage Piping
22 14 23	Storm Drainage Piping Specialties
22 33 00	Electric, Domestic-Water Heaters
22 42 00	Commercial Plumbing Fixtures
23 05 00	Common Work Results For HVAC
23 05 13	Common Motor Requirements and Control Panels for HVAC
23 05 17	Sleeves And Sleeve Seals For Hvac Piping
23 05 18	Escutcheons For Hvac Piping
23 05 29	Hangers and Supports for HVAC Piping and Equipment
23 05 48	Vibration and Seismic Controls for HVAC
23 05 53	Identification for HVAC Piping Equipment
23 05 93	Testing, Adjusting, And Balancing For Hvac
23 07 00	Mechanical Piping And Equipment Insulation
23 07 13	Duct Insulation
23 08 00	Commissioning of Mechanical Systems
23 21 13	Hydronic Piping and Valves
23 21 16	Hydronic Piping Specialties
23 31 14	Ductwork
23 33 00	Air Duct Accessories

23 34 23	HVAC Power Ventilators
23 37 13	Diffusers, Registers, And Grilles
23 74 00	Rooftop Unit [RTU]
23 81 26	Split-System Air-Conditioners
23 82 39.13	Cabinet Unit Heaters
23 82 39.16	Propeller Unit Heaters
DIVISION 00	Procurement and Contracting Requirements
DIVISION 01	General Requirements
DIVISION 02	Existing Conditions

This Work specifically includes, but is not limited to:

1. GENERAL

- 1.1. Furnish access doors as required for this Scope of Work. Installation by others.
- 1.2. Core drilling including layout, structural x-rays, and temporary protection as required for this Scope of Work. Obtain Contractor's written approval before any core drilling.
- 1.3. Layout for equipment pads and penetrations as required for this Scope of Work.
- 1.4. Saw-cutting and patching as required for this Scope of Work.
- 1.5. Supervision at concrete pours involving penetrations and sleeves associated with this Scope of Work.
- 1.6. Sealing, flashing, and escutcheons for roof, wall, and floor penetrations as required for this Scope of Work.
- 1.7. Building Information Modeling (BIM) per Front End.
- 1.8. Exterior penetrations shall be installed prior to installation of air barriers and waterproofing.

2. SITWORK AND UNDERGROUND

- 2.1. Repair of asphalt or concrete surfaces disturbed by the Work.
- 2.2. Unclassified excavating, trenching, shoring, bracing, dewatering, backfilling to grade, compacting, and patching.
- 2.3. Onsite disposal of spoils. Location to be determined by the Contractor.
- 2.4. Engineered trenching shoring system for excavation where sloping is not feasible.
- 2.5. Traffic control devices, flagmen, and anchored steel plates at roadways.
- 2.6. Locates of existing utilities on the site prior to the excavation portion of the work.
- 2.7. Hand dig in critical utility areas.

3. GENERAL PLUMBING PIPING

- 3.1. Final tie-in of domestic and sanitary piping at point of termination five (5) feet outside the building footprint.

- 3.2. Thrust blocks, concrete, anchors, and guides for underground piping.
4. GENERAL PLUMBING EQUIPMENT AND FIXTURES
 - 4.1. Escutcheons sealed to the wall and around piping, including under-counter piping.
 - 4.2. Oil separators.
5. SHEETMETAL
 - 5.1. Equipment curbs, including leveling provisions, for roof-mounted equipment.
6. MECHANICAL PIPING
 - 6.1. Thrust blocks, anchors, and guides.
 - 6.2. Temporary caps.
 - 6.3. X-Rays, Testing, and Temporary Provisions for underground Process Chilled Water. (PCW)
7. GENERAL MECHANICAL EQUIPMENT
 - 7.1. Roof Top Units (RTU).

The following work is excluded:

1. Concrete housekeeping pads. (W/ 03A)
2. Grouting. (W/ 03A)
3. Firestopping. (W/ 07B)
4. Painting unless specifically included above. (W/ 09B)
5. Structural steel supports unless specifically included above. (W/ 05A)
6. Architectural louvers.
7. Temporary HVAC

SCOPE OF WORK 23A.1 - MECHANICAL - HUB

SCOPE OF WORK

The Subcontractor shall execute the following portion of the Work described in the Subcontract Documents, including all labor, materials, services, superintendence, and other items required to complete such portion of the Work:

MECHANICAL - HUB - Including, but not limited to, Specification Section(s):

- 114000.1 FOOD SERVICE EQUIPMENT - PHASE1 (POR 4.0 & 4.1)**
- 114000.2 FOOD SERVICE EQUIPMENT - PHASE 2 (POR 4.0)**
- 114000.3 FOOD SERVICE EQUIPMENT - PHASE 2 (POR 4.1)**
- 133613.1 FABRICATED STORM SHELTERS – OPTION 1 USE THIS SECTION FOR LOCATION SPECIFIC APPLICATION. OWNER TO ADVISE ON OPTION 1 OR 2**
- 133613.2 FABRICATED STORM SHELTERS – OPTION 2 USE THIS SECTION FOR LOCATION SPECIFIC APPLICATION. OWNER TO ADVISE ON OPTION 1 OR 2**
- 22 05 00 Common Work Results for Plumbing**
- 22 05 17 Sleeves And Sleeve Seals For Plumbing Piping**
- 22 05 18 Escutcheons For Plumbing Piping**
- 22 05 19 Meters And Gauges For Plumbing Piping**
- 22 05 23 General Duty Valves For Plumbing Piping**
- 22 05 29 Handers and Supports for Plumbing Piping and Equipment**
- 22 05 48 Vibration And Seismic Controls**
- 22 05 53 Identification for Plumbing Piping and Equipment**
- 22 07 19 Plumbing And Piping Insulation**
- 22 11 16 Domestic Water Piping**
- 22 11 19 Domestic Water Piping Specialties**
- 22 13 16 Sanitary Waste And Vent Piping**
- 22 13 19 Sanitary Waste Piping Specialties**
- 22 14 13 Facility Storm Drainage Piping**
- 22 14 23 Storm Drainage Piping Specialties**
- 22 33 00 Electric, Domestic-Water Heaters**
- 22 42 00 Commercial Plumbing Fixtures**
- 220523.12 BALL VALVES FOR PLUMBING PIPING**
- 220523.14 CHECK VALVES FOR PLUMBING PIPING**
- 220523.15 GATE VALVES FOR PLUMBING PIPING**
- 220548.13 VIBRATION CONTROLS FOR PLUMBING PIPING AND EQUIPMENT**
- 220593 TESTING, ADJUSTING, AND BALANCING FOR PLUMBING**
- 220719 PLUMBING PIPING INSULATION**

220800	COMMISSIONING FOR PLUMBING
221123.21	INLINE, DOMESTIC-WATER PUMPS
221319.13	SANITARY DRAINS
221323	SANITARY WASTE INTERCEPTORS
224213.13	COMMERCIAL WATER CLOSETS
224216.13	COMMERCIAL LAVATORIES
224216.16	COMMERCIAL SINKS
224223	COMMERCIAL SHOWERS
224713	DRINKING FOUNTAINS
23 05 00	Common Work Results For HVAC
23 05 13	Common Motor Requirements and Control Panels for HVAC
23 05 17	Sleeves And Sleeve Seals For Hvac Piping
23 05 18	Escutcheons For Hvac Piping
23 05 29	Hangers and Supports for HVAC Piping and Equipment
23 05 48	Vibration and Seismic Controls for HVAC
23 05 53	Identification for HVAC Piping Equipment
23 05 93	Testing, Adjusting, And Balancing For Hvac
23 07 00	Mechanical Piping And Equipment Insulation
23 07 13	Duct Insulation
23 08 00	Commissioning of Mechanical Systems
23 81 26	Split-System Air-Conditioners
23 82 39.13	Cabinet Unit Heaters
23 82 39.16	Propeller Unit Heaters
230513	COMMON MOTOR REQUIREMENTS FOR HVAC EQUIPMENT
230719	HVAC PIPING INSULATION
230900	INSTRUMENTATION AND CONTROL FOR HVAC
232300	REFRIGERANT PIPING
233113	METAL DUCTS
233346	FLEXIBLE DUCTS
233423	HVAC POWER VENTILATORS
233600	AIR TERMINAL UNITS
233713.13	AIR DIFFUSERS
233713.23	REGISTERS AND GRILLES
233723	HVAC GRAVITY VENTILATORS
237433	DEDICATED OUTDOOR-AIR UNITS
238129	VARIABLE-REFRIGERANT-FLOW HVAC SYSTEMS
238216.14	ELECTRIC-RESISTANCE AIR COILS
238239.19	WALL AND CEILING UNIT HEATERS
DIVISION 00	Procurement and Contracting Requirements
DIVISION 01	General Requirements

DIVISION 02 Existing Conditions

This Work specifically includes, but is not limited to:

1. GENERAL

- 1.1. Furnish access doors as required for this Scope of Work. Installation by others.
- 1.2. Architectural louvers.
- 1.3. Core drilling including layout, structural x-rays, and temporary protection as required for this Scope of Work. Obtain Contractor's written approval before any core drilling.
- 1.4. Layout for equipment pads and penetrations as required for this Scope of Work.
- 1.5. Saw-cutting and patching as required for this Scope of Work.
- 1.6. Supervision at concrete pours involving penetrations and sleeves associated with this Scope of Work.
- 1.7. Sealing, flashing, and escutcheons for roof, wall, and floor penetrations as required for this Scope of Work.
- 1.8. Building Information Modeling (BIM) per Front End.
- 1.9. Layout for equipment pads and penetrations as required.
- 1.10. Saw-cutting and patching as required.

2. SITEWORK AND UNDERGROUND

- 2.1. Repair of asphalt or concrete surfaces disturbed by the Work.
- 2.2. Unclassified excavating, trenching, shoring, bracing, dewatering, backfilling to grade, compacting, and patching.
- 2.3. Onsite disposal of spoils. Location to be determined by the Contractor.
- 2.4. Engineered trenching shoring system for excavation where sloping is not feasible.
- 2.5. Traffic control devices, flagmen, and anchored steel plates at roadways.
- 2.6. Locates of existing utilities on the site prior to the excavation portion of the work.
- 2.7. Hand dig in critical utility areas.
- 2.8. Foundation drainage system.

3. GENERAL PLUMBING PIPING

- 3.1. Final tie-in of domestic, sanitary, and storm piping at point of termination five (5) feet outside the building footprint.
- 3.2. Storm drain system including piping, hangers, fittings, and drain leveling provisions.
- 3.3. Condensate drainage system.
- 3.4. Plugs, caps, tees, and valves for tie-ins to existing systems.

3.5. Thrust blocks, concrete, anchors, and guides for underground piping.

4. GENERAL PLUMBING EQUIPMENT AND FIXTURES

4.1. Infrared faucet power supply box and wiring harness for connection by others.

4.2. Escutcheons sealed to the wall and around piping, including under-counter piping.

5. START-UP AND TESTING

5.1. Chemicals and temporary material and equipment for flushing and passivation of piping systems. Flushing through equipment coils is not allowed.

5.2. Temporary material and equipment for pressure testing of piping systems. Pressure testing through equipment coils is not allowed.

5.3. Start-up screens for pumps during construction. Replace with final strainer prior to TAB and commissioning.

5.4. Vacuum and wipe clean HVAC equipment interiors prior to startup and again following commissioning.

5.5. Temporary material and equipment required for leakage testing of ductwork systems.

5.6. Quality control documentation for mechanical systems including factory testing and factory certified start-up.

6. COMMISSIONING

6.1. Commissioning assistance.

6.2. Qualified personnel, including manufacturer technicians, to attend all commissioning meetings.

6.3. Qualified personnel, including manufacturer technicians, and equipment to complete pre-functional and functional testing and trending as directed by the commissioning agent.

7. SHEETMETAL

7.1. Mechanical louvers including flashing and caulking.

7.2. Equipment curbs, including leveling provisions, for roof-mounted equipment.

7.3. Fire, fire-smoke, smoke dampers, and associated actuators.

8. MECHANICAL PIPING

8.1. Condensate drainage system.

8.2. Piping systems shall not be installed above electrical equipment. If alternative routing is not feasible, provide panning and drain piping for systems routed above electrical equipment.

8.3. Thrust blocks, anchors, and guides.

8.4. Furnish heat trace system and controllers for HVAC piping and equipment and Kitchen equipment. Installation by others.

9. GENERAL MECHANICAL EQUIPMENT

9.1. Differential pressure system

10. CONTROLS AND MONITORING

10.1. Raceway, instrumentation, wiring and terminations for control and monitoring systems.

10.2. Raceway, line voltage wiring, and terminations for control panel and device power. Final termination at panelboard by others.

10.3. Pneumatic controls tubing and root valve required for controllers, actuators, and instrumentation.

10.4. Programming of variable frequency drives (VFDs) and equipment controllers including communication and operation settings.

10.5. Factory mounted controllers, instrumentation, and programming as required to meet the design sequence of operations for all packaged HVAC systems.

10.6. Network cards and gateways to integrate packaged systems with control and monitoring system.

10.7. Software, hardware, and labor as required for successful completion of test, adjust, and balance (TAB) scope.

10.8. Interlock and control wiring and raceways as required by packaged equipment manufacturer to operate equipment independent of the building controls scope of work.

11. TESTING, ADJUSTING, AND BALANCING (TAB)

11.1. Independent testing, adjusting, and balancing.

11.2. Pressure and temperature ports in locations required to facilitate successful TAB.

11.3. Operation of fire-smoke and smoke dampers, in accordance with manufacturer's recommendations, to allow for startup, temporary conditioning, and TAB. Reset fire-smoke and smoke dampers as soon as fire alarm system can control dampers.

11.4. Seal of insulation and jacketing that has been affected during the TAB process.

11.5. Flush coils and strainers as required for successful TAB completion.

11.6. Weekly updates to TAB deficiency list.

The following work is excluded:

1. Concrete housekeeping pads.
2. Caulking for plumbing fixtures and shower units.
3. Duct smoke and heat detector.
4. Grouting.
5. Firestopping.

6. Painting unless specifically included above.
7. Structural steel supports unless specifically included above.

SCOPE OF WORK 26A - ELECTRICAL, COMMUNICATIONS, SECURITY

SCOPE OF WORK

The Subcontractor shall execute the following portion of the Work described in the Subcontract Documents, including all labor, materials, services, superintendence, and other items required to complete such portion of the Work:

ELECTRICAL, COMMUNICATIONS, SECURITY - Including, but not limited to, Specification Section(s):

26 00 10	Electrical General Requirements
26 00 14	Concrete Housekeeping Pads And Curbs For Electrical Work
26 05 19	Low-Voltage Electrical Power Conductors And Cables
26 05 26	Grounding And Bonding For Electrical Systems
26 05 29	Hangers And Supports For Electrical Systems
26 05 33	Conduit
26 05 34	Junction, Pull Boxes And Enclosures
26 05 35	Outlet Boxes
26 05 36	Cable Trays For Electrical Systems
26 05 37	Wireways
26 05 43	Underground Ducts And Raceways For Electrical Systems
26 05 44	Sleeves And Sleeve Seals For Electrical Systems
26 05 48	Vibration And Seismic Control For Electrical Equipment
26 05 53	Identification For Electrical Systems
26 08 00	Commissioning of Electrical Systems
26 08 01	Testing Electrical Systems
26 08 01.1	NETA ATS Testing Requirements - Coverpage
26 08 01.2	Primary Current Injection Testing Procedure - Cover
26 09 19	Enclosed Contactors
26 09 43.24	Site Lighting Control System
26 22 13	Low-Voltage Transformers
26 24 13	Switchboards
26 24 13.81	Integrated Power Centers
26 24 16	Panelboards
26 27 26	Wiring Devices
26 28 16	Safety Switches, Manual Transfer Switches And Fuses
26 41 13	Lightning Protection For Structures
26 43 13	Surge Protective Devices And Noise Filtering System
26 50 00	Lighting
270526	GROUNDING AND BONDING FOR COMMUNICATIONS SYSTEMS

270528	PATHWAYS FOR COMMUNICATIONS SYSTEMS
270532	COMMUNICATIONS EQUIPMENT AND CABLING SYSTEMS
270536	CABLE TRAYS FOR COMMUNICATIONS SYSTEMS
270544	SLEEVES AND SLEEVE SEALS FOR COMMUNICATIONS PATHWAYS AND CABLING
270553	LABELS FOR COMMUNICATIONS SYSTEMS
271619	COMMUNICATIONS PATCH CORDS
272133	DATA COMMUNICATIONS WIRELESS ACCESS POINTS
28 08 01	Commissioning of Electronic Fire Detection and Signaling System
28 31 05	Fire Alarm Cables and Pathways
28 31 11	Digital, Addressable Fire-Alarm System

This Work specifically includes, but is not limited to:

1. GENERAL

- 1.1. Core drilling including layout, structural x-rays, and temporary protection as required. Obtain Contractor's written approval before any core drilling.
- 1.2. Layout for equipment pads and penetrations as required.
- 1.3. Saw-cutting and patching as required.
- 1.4. Supervision at concrete pours involving penetrations and sleeves associated with this Scope of Work.
- 1.5. Sealing, flashing, and escutcheons for roof, wall, and floor penetrations as required.
- 1.6. Building Information Modeling (BIM) per Front End.
- 1.7. Temporary power and lighting as required for construction per Front End.
- 1.8. Temporary fire alarm system per Front End.
- 1.9. Develop and manage a site specific Lock-out Tag-out (LOTO) Plan.
- 1.10. Clean interior and exterior of equipment furnished and/or installed as part of this Scope of Work prior to first energization and again prior to Substantial Completion.
- 1.11. Layout of equipment that will require specific backing and framing.
- 1.12. Equipment mounting brackets as required for this Scope of Work.
- 1.13. Protect completed cabling terminations with preventive debris covering.
- 1.14. Coordinate with others as required for full integration and interface of the system(s) included in the Work.
- 1.15. Coordinate with others as required for power, pathway, conduit, sleeve, and backbox needs.
- 1.16. Firestop putty pads for electrical back boxes where required to meet fire and smoke ratings for walls.

2. SITWORK AND UNDERGROUND

- 2.1. Repair of asphalt or concrete surfaces disturbed by the Work.
 - 2.2. Unclassified excavating, trenching, shoring, bracing, dewatering, backfilling to grade, compacting, and patching.
 - 2.3. Onsite disposal of spoils. Location to be determined by the Contractor.
 - 2.4. Engineered trenching shoring system for excavation where sloping is not feasible.
 - 2.5. Traffic control devices, flagmen, and anchored steel plates at roadways.
 - 2.6. Locates of existing utilities on the site prior to the start of construction.
 - 2.7. Hand dig, use vac truck excavation in critical utility areas.
 - 2.8. Electrical ductbank and manholes, including conduit, grounding connectors, pull strings, and waterproofing. Concrete to be done by 03A.
 - 2.9. Telecom ductbank, manholes, and vaults including conduit, waterproofing, labeling, and precast concrete if required. Cast in place concrete in the EYD and MYD to be completed by 03A.
 - 2.10. Hoisting and rigging, setting of vaults.
 - 2.11. Boring and conduit for telecom leading from main campus to zero vaults.
3. LIGHTNING PROTECTION AND GROUNDING
- 3.1. Lightning Protection.
 - 3.2. Underground grounding system. Stub above grade with whip for future equipment.
 - 3.3. Fence Grounding.
4. ELECTRICAL
- 4.1. Lighting supports as required including all site lights.
 - 4.2. Raceway between the elevator hoist ways and the fire command center.
 - 4.3. Termination of power circuits for building control panels and devices onto switchboards or panelboards for the Main Entrance.
 - 4.4. Diesel fuel required for testing of emergency generator. Completely fill the fuel day tank and remote storage tank with diesel fuel upon initial installation, again at the completion of final testing, and prior to Substantial Completion.
 - 4.5. Arc flash labels and Arc Flash Study.
 - 4.6. Field adjustment of breaker and relay settings. Breaker setting values furnished by others.
 - 4.7. Pull strings required for all conduit for future conductors and cables.
 - 4.8. Conductors and connections required for device power at the Main Entrance, Power from utility meter to Main Entrance equipment, from the Main Entrance to the HUB, and power for site lights specifically called out in contract documents.

5. FIRE ALARM

5.1. Raceways and supports for fire alarm system in the Fire Pump House.

6. COMMISSIONING

- 6.1. Commissioning assistance.
- 6.2. Qualified personnel, including manufacturer technicians, to attend all commissioning meetings.
- 6.3. Qualified personnel, including manufacturer technicians, and equipment to complete pre-functional and functional testing and trending as directed by the commissioning agent.
- 6.4. Temporary load banks including temporary control power and labor for monitoring and operating temporary load banks during testing.
- 6.5. Fire watch during all load banking activities.
- 6.6. Flagging, signage, and barriers during all load banking and electrical testing activities.
- 6.7. After-hours work to relocate and connect load banks in preparation for the following days testing.

7. COMMUNICATION SYSTEMS

- 7.1. Temporary communication systems per the Front End.
- 7.2. Telecommunications pull strings, j-hooks, and innerduct.
- 7.3. Roof Boxes to be provided as a part of this scope and coordinate with roofing (07A) for openings.

8. RACEWAYS

- 8.1. Coordinate with others as required for power, pathway, conduit, sleeve, and backbox needs.
- 8.2. Clear raceways of obstructions prior to cable installation and protect after completion of installation.

9. SECURITY

- 9.1. Security Bollards.
- 9.2. Site security underground raceway, handholes, and pull strings. Stub conduits above grade at each camera pole location and cap for continuation by others.

The following work is excluded:

- 1. Concrete housekeeping pads. (03A)
- 2. Concrete for electrical ductbank. Coordinate duct bank concrete with concrete contractor min. 2 days in advance of planned pour date. (03A)
- 3. Telecom stayform concrete. (03A)

4. Concrete for Light pole and PID pole bases. (03A)
5. Structural steel supports unless specifically included above. (05A)
6. Grouting. (07A)
7. Firestopping unless specifically included above. (07A)
8. Painting unless specifically included above. (09B)
9. Temperature control wiring. (23A)
10. Fiber cables. (BOP Scope)
11. PID Poles and Security Cameras. (BOP Scope)
12. Fire Alarms and Heat/Smoke Detectors. (BOP Scope)

SCOPE OF WORK 26A.1 - ELECTRICAL, COMMUNICATIONS, SECURITY - HUB

SCOPE OF WORK

The Subcontractor shall execute the following portion of the Work described in the Subcontract Documents, including all labor, materials, services, superintendence, and other items required to complete such portion of the Work:

ELECTRICAL, COMMUNICATIONS, SECURITY - HUB - Including, but not limited to, Specification Section(s):

260500	COMMON WORK RESULTS FOR ELECTRICAL
260570	OVERCURRENT PROTECTIVE DEVICE STUDIES
260923	LIGHTING CONTROL SYSTEMS AND DEVICES
261219	PAD-MOUNTED, LIQUID-FILLED, MEDIUM-VOLTAGE TRANSFORMERS
262213	LOW-VOLTAGE DISTRIBUTION TRANSFORMERS
262413	SWITCHBOARDS
262416	PANELBOARDS
262726	WIRING DEVICES
262813	FUSES
262816	DISCONNECT SWITCHES
262818	CIRCUIT BREAKERS
270526	GROUNDING AND BONDING FOR COMMUNICATIONS SYSTEMS
270528	PATHWAYS FOR COMMUNICATIONS SYSTEMS
270532	COMMUNICATIONS EQUIPMENT AND CABLING SYSTEMS
270536	CABLE TRAYS FOR COMMUNICATIONS SYSTEMS
270544	SLEEVES AND SLEEVE SEALS FOR COMMUNICATIONS PATHWAYS AND CABLING
270553	LABELS FOR COMMUNICATIONS SYSTEMS
271619	COMMUNICATIONS PATCH CORDS
272133	DATA COMMUNICATIONS WIRELESS ACCESS POINTS
280800	COMMISSIONING OF ELECTRONIC SAFETY AND SECURITY SYSTEMS
281300	SECURITY SYSTEMS
283105	FIRE ALARM CABLES AND PATHWAYS
283111	DIGITAL, ADDRESSABLE FIRE-ALARM SYSTEM
283131	PROPRIETARY SUPERVISING STATION, FIRE-ALARM AND EMERGENCY COMMUNICATION SYSTEM
DIVISION 00	Procurement and Contracting Requirements
DIVISION 01	General Requirements
DIVISION 02	Existing Conditions

This Work specifically includes, but is not limited to:

1. GENERAL

- 1.1. Furnish access doors as required. Installation by others.
- 1.2. Core drilling including layout, structural x-rays, and temporary protection as required. Obtain Contractor's written approval before any core drilling.
- 1.3. Layout for equipment pads and penetrations as required.
- 1.4. Saw-cutting and patching as required.
- 1.5. Supervision at concrete pours involving penetrations and sleeves associated with this Scope of Work.
- 1.6. Sealing, flashing, and escutcheons for roof, wall, and floor penetrations as required.
- 1.7. Building Information Modeling (BIM) per Front End.
- 1.8. Temporary power and lighting per Front End.
- 1.9. Temporary fire alarm system per Front End.
- 1.10. Develop and manage a site specific Lock-out Tag-out (LOTO) Plan.
- 1.11. Clean interior and exterior of equipment furnished and/or installed as part of this Scope of Work prior to first energization and again prior to Substantial Completion.
- 1.12. Layout of equipment that will require specific backing and framing.
- 1.13. Equipment mounting brackets as required for this Scope of Work.
- 1.14. Cut and install ceiling tiles that require ceiling mounted devices. Ceiling tiles furnished by others.
- 1.15. Protect completed cabling terminations with preventive debris covering.
- 1.16. Coordinate with others as required for full integration and interface of the system(s) included in the Work.
- 1.17. Coordinate with others as required for power, pathway, conduit, sleeve, and backbox needs. Perform inspections to confirm rough-in prior to closing ceilings and walls.
- 1.18. Equipment cabinets, racks, and Power Distribution Unit (PDU) plug strips.
- 1.19. Grounding from nearest telecom ground bus bar to the racks.
- 1.20. Coordinate all hangers with Pre-Engineered Metal Building structure. Provide layout drawings for items to be installed in concrete.
- 1.21. Firestop cast-in-place sleeves for penetrations required by this Scope of Work.
- 1.22. Firestopping, putty pads, etc. for electrical back boxes/equipment where required to meet fire and smoke ratings for walls.

2. SITWORK AND UNDERGROUND

- 2.1. Repair of asphalt or concrete surfaces disturbed by the Work.

- 2.2. Unclassified excavating, trenching, shoring, bracing, dewatering, backfilling to grade, compacting, and patching.
 - 2.3. Onsite disposal of spoils. Coordinate spoil disposal locations with Site Superintendent / Contractor.
 - 2.4. Engineered trenching shoring system for excavation where sloping is not feasible.
 - 2.5. Traffic control devices, flagmen, and anchored steel plates at roadways.
 - 2.6. Locates of existing utilities on the site prior to the start of construction.
 - 2.7. Hand dig, Vac truck excavation in critical utility areas.
 - 2.8. Electrical ductbank and manholes. Including conduit, grounding connectors, conductors, and waterproofing.
 - 2.9. Telecom manholes and waterproofing.
 - 2.10. Hoisting, rigging, and setting of vaults.
3. LIGHTNING PROTECTION AND GROUNDING
- 3.1. Lightning Protection.
 - 3.2. Underground grounding system.
 - 3.3. Ground Bars.
4. ELECTRICAL
- 4.1. Lighting supports as required.
 - 4.2. Raceway between the elevator hoist ways and the fire command center.
 - 4.3. Termination of power circuits for building control panels and devices onto switchboards or panelboards provided within this Scope of Work. Conduit, wire, and terminations at the control panel and devices for these circuits provided by others.
 - 4.4. Power to auto door operators with final connection to be made by others. Wall bases, conduit, and wiring (including any low voltage) for actuators is provided by others. Final wiring connections to actuator and operator provided by others.
 - 4.5. Heat trace controller and cabling.
 - 4.6. Arc flash labels and Arc Flash Study.
 - 4.7. Field adjustment of breaker and relay settings. Breaker setting values furnished by others.
 - 4.8. Install and connect faucet power supply box and wiring harness, furnished by others.
 - 4.9. Connections for mechanical equipment and food service equipment.
 - 4.10. All electrical connections within the storm shelter. Solar panels to be provided by others.

5. FIRE ALARM

- 5.1. Power circuits for fire alarm equipment and devices.
 - 5.2. Raceways and supports for fire alarm system.
 - 5.3. Raceway, wiring, and terminations of power circuits for all fire protection devices and controllers.
 - 5.4. Control of fire/smoke and smoke dampers. Fire/smoke and smoke dampers provided by others.
 - 5.5. Furnish duct detectors to be installed by others.
 - 5.6. Fire-rated door hold-open release devices and contacts and wiring.
 - 5.7. Fire alarm design drawings, devices, wiring, labeling, and programming.
 - 5.8. Furnish smoke/heat detectors. Installation by others. Power to be completed as a part of this scope.
6. COMMISSIONING
- 6.1. Commissioning assistance.
 - 6.2. Qualified personnel, including manufacturer technicians, to attend all commissioning meetings.
 - 6.3. Qualified personnel, including manufacturer technicians, and equipment to complete pre-functional and functional testing and trending as directed by the commissioning agent.
 - 6.4. Temporary load banks including temporary control power and labor for monitoring and operating temporary load banks during testing.
 - 6.5. Fire watch during all load banking activities.
 - 6.6. Flagging, signage, and barriers during all load banking and electrical testing activities.
 - 6.7. After-hours work to relocate and connect load banks in preparation for the following days testing.
7. COMMUNICATION SYSTEMS
- 7.1. Temporary communication systems per the Front End.
 - 7.2. Network switches and patch panels.
 - 7.3. Pathways, junction boxes, and connections for future AV equipment.
8. RACEWAYS
- 8.1. J-hooks for cable routing where cabling travels outside of conduits and cable tray.
 - 8.2. Furnish all specialty back-boxes for installation by others.
 - 8.3. Coordinate with others as required for power, pathway, conduit, sleeve, and backbox needs.

8.4. Clear raceways of obstructions prior to cable installation and protect after completion of installation.

9. SECURITY SYSTEM

9.1. Door position switches, including knockouts.

9.2. Wiring and terminations at door hardware for future connections for security equipment.

9.3. Furnish magnetic locks and emergency release buttons.

9.4. Provide pathways and wire terminations with box and cover plate for applicable future security devices.

The following work is excluded:

1. Concrete housekeeping pads. (03A)
2. Grouting. (07A)
3. Firestopping unless specifically included above. (07A)
4. Painting unless specifically included above. (09B)
5. Structural steel supports unless specifically included above. (05A)
6. Light pole bases. (03A)
7. Temperature control wiring. (23A)
8. Concrete for electrical ductbank. (03A)
9. Fiber cables. (BOP Scope)
10. AV equipment. (BOP Scope)
11. Security Cameras and card readers. (BOP Scope)

SCOPE OF WORK 31C - SITE UTILITIES

SCOPE OF WORK

The Subcontractor shall execute the following portion of the Work described in the Subcontract Documents, including all labor, materials, services, superintendence, and other items required to complete such portion of the Work:

SITE UTILITIES - Including, but not limited to, Specification Section(s):

33 14 00	Site Water Fire Water Utility Distribution Piping
33 31 00	Site Sanitary Utility Sewerage Piping
33 32 00.10	Plug Valves
33 41 00	Subdrainage
33 42 00	Stormwater Conveyance
33 81 26	Communications Underground Ducts, Manholes, and Handholes
DIVISION 00	Procurement and Contracting Requirements
DIVISION 01	General Requirements

This Work specifically includes, but is not limited to:

1. GENERAL

- 1.1. Excavation is unclassified.
- 1.2. Locate existing utilities on the jobsite prior to the start of the Work and maintain those utility markers while working on the jobsite. Protect from damage existing utilities scheduled to remain and make repairs as needed if damage should occur. Submit as-built drawing of existing conditions for coordination and record purposes.
- 1.3. Undetectable underground warning tape and/or all identification markers at all underground raceways and duct.
- 1.4. Surveying and staking. Site control points will be provided by others.
- 1.5. Dewatering as required for this Scope.
- 1.6. Spoils shall be distributed on site as directed by Contractor.
- 1.7. Redlines/as-builts of this Scope to be submitted monthly with pay application.
- 1.8. Building Information Modeling (BIM) per Front End Documents.
- 1.9. Subcontractor shall comply with Campus access requirements for all employees, delivery drivers, management and other personnel requiring access. Down time, processing time, standby time and/or other efforts associated with these access requirements shall be paid by Subcontractor.
- 1.10. Erosion control as it relates to this Scope of Work.

2. SITE UTILITIES

- 2.1. Sanitary and utility service lines to within five feet (5'-0") of the building perimeter

and capped for future continuation by others (except as noted). Mark and maintain above-ground capped lines.

- 2.2. Domestic water and fire water lines. Fire and water lines to be installed to flange inside the building to twelve inches (12") above finish floor for future continuation by others.
 - 2.3. Trenching, gravel bedding, encasement, backfill, thrust blocks, and kickers. Compact backfill to meet design density.
 - 2.4. Fire hydrant assemblies and remote fire department connections.
 - 2.5. Precast concrete manholes and utility vaults.
 - 2.6. Flush, clean, and test utility systems required to produce a complete, engineer-approved system per requirements of the authorities having jurisdiction.
 - 2.7. Adjust manhole covers, including, but not limited to, covers, structure lids, and cleanout covers, to be at finish elevation of pavement, site concrete, and landscaping.
 - 2.8. Taps into existing utilities as required, including permits, permit costs, and coordination with local entity.
 - 2.9. Foundation rock bedding as applicable with this Scope.
 - 2.10. Applicable demo to tie-into existing systems.
 - 2.11. Inlet protection for all inlets for the duration of this scope.
3. *STORM DRAINAGE SYSTEMS*
- 3.1. Storm sewers including trenching, gravel bedding, encasement (if required), and backfill. Compact backfill to meet design density.
 - 3.2. Storm drainage system, including roof drain system tie-ins.
 - 3.3. Precast concrete structures, including curb inlets, area inlets, catch basins, and junction boxes.
 - 3.4. Rip rap.
 - 3.5. Storm water piping that connects to downspouts must be brought to above grade drainage boots provided by this scope. Downspouts are by others.
 - 3.6. Foundation rock bedding applicable with this Scope.
 - 3.7. Trench Drains.
 - 3.8. Slot drains.
 - 3.9. Inlet protection for all inlets for the duration of this Scope.
 - 3.10. Underground condensate conveyance.
 - 3.11. Downspout boots at roof drain tie-ins.

The following work is excluded:

1. Rock excavation.
2. Perimeter foundation drain.
3. Underground mechanical and electrical utilities, including but not limited to, chilled water supply and return, high pressure steam, electrical lines, and telecommunication conduits and wires.
4. Underground electrical lines, including associated duct banks, manholes, and conduit.
5. Underground telecommunications and fiber lines, duct banks, manholes/structures and conduit.
6. Natural gas piping.
7. Wick drains.
8. Above ground condensate conveyance lines, including Unistrut and post-installed epoxy anchors at PVC condensate conveyance lines.
9. Storm water reinforced concrete box culvert.