Bid Addendum 03



CLARKNEXSEN

1523 Elizabeth Ave, Suite 300 Charlotte, NC 28204

Date: May 23, 2019

Project: UNC Charlotte Science Building: STEM

COMM #: SCO ID #: 16-14335-02D Code: 46626 Item: 301 Clark Nexsen #: 6222A

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This ADDENDUM is to be a part of the contract documents and modifies and takes precedence over the original bid documents, as noted below and in any attached documents. Original items of the plans and specifications that have been modified, amended, voided or suspended through previous addendums, shall remain in effect. It is the responsibility of the Bidder to notify and/or distribute this ADDENDUM to those sub-bidders who have received prints or digital files. The Bidder is to acknowledge receipt of this ADDENDUM in the space provided on the Bid Form.

DRAWING MODIFICATIONS

No drawing modifications in Addendum #3

PROJECT MANUAL MODIFICATIONS

- Replace the following specification sections in their entirety:
 - 0 107313 POINT SUPPORTED GLASS CANOPY
 0 250000 INSTRUMENTATION AND CONTROL FOR HVAC
- Add the following specification sections to the Project Manual:

o N/A

ATTACHMENTS

- RFI Responses
- Specifications

END OF BID ADDENDA 03

	Addendum 3 - 5/23/2019				
#	Addendum	Page / Sheet / Seidder Question / Comments	Response		
56	Addendum 3	Division 250000, 2.14 Control Valves. Please confirm that PICCV energy valves are to be used for AHU coils and service entrance heat exchangers; and that conventional pressure dependent valves are approved for hot water reheat coils.			
57	Addendum 3	Drawing H0.03; Alternate No 12; A. Base Bid is the use of Mechanical Joints in accessible areas Please clarify th Definition of "Accessibility" because on Drawing H0.01 - Accessibility Footnote Item B indicates that "Accessibility" defined as being accessed, for service, repair or replacement by "an averaged sized individual"	e ceilings and within areas not physically reachable for repair or observation.		
58	Addendum 3	Please provide clarification on Note 31 "Provide at least three-elbow swing for pipe take-offs to terminal equipment risers, on Drawing H0.01	A 3-elbow swing is standard terminology in the industry. At the branch take-off, three elbows & are to be provided to allow flexibility in the system.		
59	Addendum 3	- Item # 1 & 2 basically indicates that piping less than 20	2 The preferred hanging method is as indicated in the specifications. Contractor can propose alternate hanging methods as a cost reduction measure. Design of alternate hanging methods shall be the responsibility of the contractor/subcontractor.		
60	Addendum 3	Specification Section 232116 is to be used for Alternate 1: however we ask that it be looked at. 232116; 3.2 N requires all branch connections to mains using tee fittings main pipeWe ask that this item be clarified as to the correct means & method to be in accordance with the Spe If the mains are 8" and the branch is 1", what type tee fittin is to be used?	applicable to this application. in		
61	Addendum 3	What valve spec is to be utilized for the base bid? Spec Section 230523 appears to be driven to Alternate 12, whic is flanged, soldered and/ threaded valves.	Supplemental specification section 230523.1 will be included in Addendum #4.		
62	Addendum 3	Spec Section 230523 - page 12 - indicates that the chilled water ball valves 2" and below are to be threaded; within a copper system. Can these valves be sweat? The Hot water valves on page 13 are indicated to be sweat			
63	Addendum 3	Drawing H0.03 indicates that the base bid piping shall be: 1. Steel pipe joints with grooved ends up to 12" 2. Copper pipe joints with pro-pess ends up to 4" What is the size break? Can it be copper up to 2" and steel 2-1/2" above?	Yes. This can be copper pipe up to 2" and steel pipe 2-1/2" and above.		
64	Addendum 3		The basis of design product (Wallguard) is intended for heavy duty use and is available in .125 (11 gauge). The intent is to provide heavy-duty corner and wall protection in the high-traffic service areas of the building. A lower gauge thickness is acceptable, not less than 14 gauge.		

	Addendum 3 - 5/23/2019				
#	Addendum	Page / Sheet / SBidder Question / Comments	Response		
65	Addendum 3	Some of the bidders are having a hard time taking off all of the ductwork in the penthouse only being able to see it in 2D on sheets H1.40-H1.40C. Is there a way to to issue a 3D view of the ductwork in the penthouse so the bidders can clearly see where the ductwork overlaps and at what height. For instance, On H1.40A, you have 2 stacked fans Which is up, which is down?	3D view will be added to the drawings in addendum #4.		
66	Addendum 3		d		
67	Addendum 3	Are the 1011M4 unframed marker board panels supposed to be ceramic steel or should they be glass? The specs mention in the same line (2.1B) both dry erase (ceramic steel) and glass.	To clarify, the specifications indicate that framed marker boards are to be ceramic steel panel with aluminum frames, and unframed marker boards are to be glass.		
70	Addendum 3	115313 2.6 K.1 notes airfoil as stainless steel with polytetrafluorethylene or polyvinylidene fluoride or painted steel to match hood exterior. To be clear, please confirm painted steel to match hood exterior is acceptable for the airfoil.	Yes, that is the design intent. The airfoil finish must match the finish on the fume hood exterior.		
71	Addendum 3	115313 2.9 Accessories A, B, C, D note airflow monitoring and alarm sensors; however, section 230995 details the [Phoenix] control monitors and alarm sensors. Please confirm all alarm monitors and sensors are provided by the controls contractor as part of their HVAC system and not b the fume hood which will not interface or control the HVAC system.	compatible with the specified HVAC controls and BAS system.		
72	Addendum 3	123553 2.13 H Matching requires sequence matching by	The intent is to ensure that all veneers within an individual room have an acceptable level of b uniformity of grain and color, subject to approval of veneer sample. In the interest of not adding additional cost to the project, we will remove the requirement for sequence matching from the specifications.		
73	Addendum 3	123553 2.14 E gas piping within flexible casework system comply with Division 22 sections. 226113 requires lab piping for Air, C02, N2, cylinder Gas be oxy-cleaned and capped. Please confirm the Flexible Casework System internal factory pre-piping should be Oxy-cleaned.	Yes, the service piping within the laboratory casework must comply with Division 22 sections.		
74	Addendum 3	123553 2.19 E drawer slides indicates several grades based on drawer size; however, many casework types scheduled in A10.05 will have multiple drawer slide grades within the same cabinet. For consistency, please confirm i is acceptable to standardize Grade 1HD within a single cabinet body or casework type.	8 1		

	Addendum 3 - 5/23/2019				
#	Addendum	Page / Sheet / Sidder Question / Comments	Response		
75	Addendum 3	123553 2.25 C.1 notes vandal resistant faucets and fixtures often required in K12 settings; however, the Chicago Faucet model numbers indicated do not include the VR features (or cost). Please confirm VR is not required for the lab faucets and fixtures.			
76	Addendum 3	123535 2.25E Finish stated chromium plated with clear epoxy coating referring to 090000 for plated metal finish. 090000-4 Finish Schedule Fixtures indicates satin chrome finish; however, Chicago Faucet model numbers indicated are polished chrome plated finish. Please confirm the lab fixtures are chromium plated in a satin chrome finish with clear epoxy coating.	Satin chrome finish is the design intent. Fixture schedule will be revised to indicate model numbers that are satin chrome finish.		
77	Addendum 3	123535 2.25E Finish stated chromium plated with clear epoxy coating referring to 090000 for plated metal finish. 090000-4 Finish Schedule Fixtures indicates satin chrome finish; however, Chicago Faucet model numbers indicated are polished chrome plated finish. Please confirm the lab fixtures are chromium plated in a satin chrome finish with clear epoxy coating.	The specifications are correct- the final design intent was to go with all wood cabinets and doors/drawer fronts. There are a few details that show metal cabinets that are obsolete.		
78	Addendum 3	Question on opening 236.2. Per the door schedule the hardware set for this opening is INT52(door with side lite & Transom. However the elevation in the drawings shows a plain door. Please advise.	The correct hardware set for this door is INT-61.		

SECTION 107313 - POINT SUPPORTED GLASS CANOPY

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Structural steel columns, beams, and other supporting members.
 - 2. Painted finish on structural steel.
 - 3. Point supported glass canopy, complete with "spider" fittings, fasteners, anchors and attachment devices.
 - 4. Glass and glazing accessories.
 - 5. Accessories indicated, specified, or required to complete installation.

1.2 SYSTEM DESCRIPTION

A. General: The point supported glass canopy is comprised of a structural steel support frame and glass panels attached to the frame.

1.3 DELEGATED ENGINEERING REQUIREMENTS

- A. Contract Document Concept: Drawings and Specifications express concept of point supported glass canopy work, however, they may not indicate or specify total work that may be required, nor shall they be construed as engineered.
- B. Delegated Engineering Responsibility: Require manufacturer to employ a delegated engineering professional to provide engineering for each member and component of point supported glass canopy work, including structural steel support frame, required to meet concept expressed in Contract Documents that includes, but is not limited to, following:
 - 1. Comprehensive engineering analysis indicating location, type, magnitude, and direction of loads imposed on structural steel support frame.
 - 2. Preparation of engineering calculations, shop drawings, and other submittals.

1.4 PERFORMANCE REQUIREMENTS

A. Wind Uplift Resistance: Design roofing system to resist wind uplift pressures indicated on the Drawings when tested according to ASCE-7, FM Approvals 4474, UL 580, or UL 1897.

- B. Thermal Movements: Allow for thermal movements from ambient and surface temperature changes.
 - 1. Temperature Change: 120 deg F, ambient; 180 deg F, material surfaces.
- C. AESS: Structural steel framing for point-supported canopies is designated AESS-4 in accordance with AISC requirements. Fabrication and erection shall be in accordance with requirements of this designation. Comply with requirements of ANSI/AISC 303, Sections 1 through 9 and as modified in Section 10, "Architecturally Exposed Structural Steel."

1.5 PREINSTALLATION MEETINGS

A. Preinstallation Conference: Conduct conference at Project site.

1.6 SUBMITTALS

- A. Product Data: Manufacturer's technical product literature for each product indicated, specified, or required.
- *B. Manufacturer quality certification: Indicating compliance with quality assurance requirements.*
- C. Shop Drawings: Show plans, elevations, sections, details, and attachments to other work.
 - 1. AESS:
 - a. Include details of cuts, connections, splices, camber, holes, and other pertinent data.
 - b. Include embedment Drawings.
 - c. Indicate welds by standard AWS symbols, distinguishing between shop and field welds, and show size, length, and type of each weld. Show backing bars that are to be removed and supplemental fillet welds where backing bars are to remain. Indicate grinding, finish, and profile of welds.
 - d. Indicate type, size, and length of bolts, distinguishing between shop and field bolts. Identify pretensioned and slip-critical, high-strength bolted connections. Indicate orientation of bolt heads.
 - e. Indicate exposed surfaces and edges and surface preparation being used.
 - f. Indicate special tolerances and erection requirements.
 - 2. Glazing:
 - a. Show fabrication and installation details of glass, frit, and assembly into an insulating glass unit. Include plans, elevations, sections, and details of metal fabrications and their connections. Show anchorage and accessory items.

- b. Include details of provisions for assembly expansion and contraction and for draining moisture occurring within the assembly to the exterior.
- c. Include full-size isometric details of each vertical-to-horizontal intersection, showing the following:
 - 1) Joinery and fittings.
 - 2) Anchorage.
 - 3) Expansion and contraction provisions.
 - 4) Glazing.
- 3. Structural Calculations
 - a. Prior to fabrication of the structural glazing, submit calculations prepared in accordance with current rules for structural glazing and applicable codes as called for by the Project Engineer. Include analysis and engineering for all code-required load combinations. Consider the following load cases: live load, dead load, wind, seismic, thermal, rain, and snow loads. Account for drifting snow from upper roofs where wind run-up is possible.
 - b. Supply structural reactions in each axis, at each typical support, for review and acceptance by the Project Engineer, and the maximum glass deflections in all axis.
 - c. Supply calculations for support and other details as necessary.
 - d. Panel thickness shall be sized by the Specialty Glazed Structure Contractor.
 - *e.* Existing text reports are only acceptable as proof of capacity calculations, but will not be acceptable in lieu of calculations.
 - f. Include seal of delegated engineer.
- D. Samples for Verification *and approval*:
 - 1. 12 inch square Sample of glass.
 - 2. Sample of each type of fitting *or connection* required.
 - 3. Two steel plates, 3/8 by 8 by 4 inches, with long edges joined by a groove weld.
 - 4. 12 inch square steel Sample of each painted finish.
 - 5. 12 inch long Sample of sealant.

E. Welding Procedure Specifications (WPSs) and Procedure Qualification Records (PQRs): Provide in accordance with AWS D1.1/D1.1M for each welded joint including the following:

- 1. Power source (constant current or constant voltage).
- 2. Electrode manufacturer and trade name, for demand-critical welds.

F. Delegated-Design Submittal: Include analysis data signed and sealed by the delegated engineer responsible for their preparation.

1.7 QUALITY ASSURANCE

- A. Manufacturer / Fabricator / Installer Qualifications:
 - 1. Company with not less than 10 years' experience in performing structural steel and structural glass work on the same project similar in design, products, and extent to scope of this Project; with a record of successful in-service performance; and with sufficient production capability, facilities, and personnel to produce required Work.
 - 2. **Fabricating** company offers complete design and engineering services for work performed. *performs design, engineering, and fabrication services.*
 - 3. Fabricator must have and maintain a written, current quality-control process acceptable to the engineer of record. Acceptable process certifications include one of the following: AISC Fabricator Certification, category BU, ISO 9001 with specific provisions for steel structures, and IAS AC172. Processes not listed are subject to review and approval.
- B. Delegated Engineering Professional Qualifications: Professional engineer legally authorized to practice in North Carolina and experienced in providing engineering services of kind indicated that have resulted in installations similar to this Project, and, that has a record of successful in-service performance.
- C. Preinstallation Conference: Conduct conference at Project site.
- D. Safety Glass: Comply with ANSI Z97.1 and testing requirements of 16 CFR, Part 1201 for Category II materials.
- *E.* Welding Qualifications: Qualify procedures and personnel in accordance with AWS D1.1/D1.1M.

1.8 FIELD CONDITIONS

- A. Weather Condition Limitation: Proceed with work only when existing and forecasted weather conditions will permit installation according to manufacturers' instructions and warranty requirements, including, but not limited to, temperature, humidity, precipitation, and wind conditions are favorable.
- 1.9 WARRANTY
 - A. Manufacturers Special Warranty: Warranty for engineering and installation workmanship issued by the manufacturer for a period of 5 years beginning 30 days after completion of the scope of work.

B. Manufacturer's Special Warranty for Laminated Glass: Manufacturer agrees to replace laminated-glass units that deteriorate within 5 years from date of Final Acceptance. 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.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Basis of Design: Contract Documents are based on the system specified below to establish a standard of quality. Other acceptable manufacturers with products having equivalent characteristics may be considered, provided deviations are minor and design concept expressed in Contract Documents is not changed, as judged by Architect.
 - 1. Manufacturer: Novum Structures.
 - 2. System: PSG Systems and TR Systems.
- B. Other Acceptable Manufacturers: Subject to compliance with requirements of Contract Documents, provide products by one of manufacturers listed alphabetically below. If not listed, submit as substitution according to Conditions of the Contract and Division 01 Sections.
 - 1. Innovative Structural Glass, Inc.
 - 2. Seele.
 - 3. Uni-Sky Corporation.

2.2 MATERIALS

- A. Architecturally Exposed Steel Structure:
 - 1. Structural Steel: ASTM A36, **A992** or A500, Grade B, or as required by the delegated engineering.
- B. Laminated Glass:
 - 1. Panel Composition:
 - a. Top Lite: Clear fully tempered glass; thickness as required by delegated engineering; with manufacturer's standard gray *(RAL 7031)* ceramic frit in a *3mm* dot pattern with approximately *38* percent coverage on No. 2 surface .

- b. Interlayer: Clear PVB.
- c. Bottom Lite: Clear fully tempered glass; thickness as required by delegated engineering.
- 2. Fully Tempered Glass: ASTM C1048, Kind FT (fully tempered), Condition A (uncoated) unless otherwise indicated, Type I, Class 1 (clear) or Class 2 (tinted) as indicated, Quality-Q3; minimum compressive strength of 16,000 PSI.
 - a. Fabrication Process: By horizontal (roller-hearth) process with roller-wave distortion certified not to exceed an average of 0.02 mm for uncoated tempered glass.
 - b. Heat Soaking: Heat soak each piece of glass according to DIN 18516-4 for a minimum 15 hour cycle at a temperature of 290 degrees C.
- C. Fittings:
 - 1. Type: Rotules with machined finish button heads that attach back to structure via stainless steel glazing arms with brushed finish.
 - 2. Material: Type 316 stainless steel.
 - *3. Fasteners: Type 316 stainless steel bolts with bright machine finish.*
 - 4. Bolts: Type 316 stainless steel bolts with bright machine finish.
 - 5. Bushing: Nylatron polyamide.
 - 6. Gaskets: Fully vulcanized fiber, neoprene or procured silicone.
- D. Bolts:
 - 1. High-Strength Bolts, Nuts and Washers: Provide a standard carbon steel mechanically galvanized or with a dacromet coated finish, as necessary.
 - 2. Other Bolts and Nuts: Bolts that are not high-strength or stainless and are subject to corrosive environment, shall be hot dip galvanized, dacromat coated, mechanically galvanized or electroplated. In no circumstances shall bolts without any finish be used, unless noted in the approved drawings.
- E. Tension Rods: Non-structural Stainless steel with brushed finish.
- F. Aluminum Gutter: ASTM B209, aluminum sheet, alloy as standard with manufacturer for finish required, with temper as required to suit forming operations and performance required; with smooth, flat surface
- G. Glazing Sealant:
 - 1. Type: Neutral-curing silicone glazing sealant complying with ASTM C920, Type S, Grade NS, Class 25 or 50, Use G.
 - 2. Colors: As selected by Architect from full range of manufacturer's standard colors.
 - 3. Acceptable Products:

- a. Dow Corning Company; Dowsil 999A Silicone Glazing Sealant.
- b. GE Silicones; SCS2000 SilPruf.
- c. Pecora Corp.; 860.
- d. Tremco Commerical Sealants and Waterproofing; Proglaze SSG.

2.3 FABRICATION

- A. Components and Fittings: Fabricate in shop, ready for erection at site.
- B. Fabricate components with clearances to enable installation and dynamic movement of seals and permit ease of field assembly.
- C. Field fitting, cutting, drilling, tapping and other such operations will not be permitted at site, unless specifically indicated on approved shop drawings.
- D. Fit and fabricate members in proper alignment with surfaces straight, true to plane, free from wave, warp, buckle or other defects.

E. Category AESS 4:

- 1. Comply with overall profile dimensions of AWS D1.1/D1.1M for welded built-up members. Keep appearance and quality of welds consistent. Maintain true alignment of members without warp exceeding specified tolerances.
- 2. Prepare surfaces according to Part 2 "Shop Priming" Article and SSPC-SP 6 (WAB)/NACE WAB-3.
- *3. Grind sheared, punched, and flame-cut edges to remove burrs and provide smooth surfaces and eased edges.*
- 4. Make intermittent welds appear continuous, using filler or additional welding.
- 5. Seal weld open ends of hollow structural sections with 3/8-inch (9.5-mm) closure plates.
- 6. Limit butt and plug weld projections to 1/16 inch (1.6 mm).
- 7. Install bolt heads on the same side of each connection and maintain orientation consistently from one connection to another.
- 8. *Remove weld spatter, slivers, and similar surface discontinuities.*
- 9. *Remove blemishes and surface irregularities resulting from temporary braces or fixtures by filling or grinding, before cleaning, treating, and shop priming.*
- 10. Grind tack welds smooth unless incorporated into final welds.
- 11. Remove backing and runoff tabs, and grind welds smooth.
- 12. Limit as-fabricated straightness tolerance to one-half that permitted for structural-steel materials in ANSI/AISC 303.
- **13.** Limit as-fabricated curved structural steel tolerance to that permitted for structural-steel materials in ANSI/AISC 303.
- 14. Limit as-fabricated straightness tolerance of welded built-up members to one-half that permitted by AWS D1.1/D1.1M.
- **15.** Conceal fabrication and erection markings from view in the completed structure.

- 16. Make welds uniform and smooth.
- 17. Cut out mill marks from mill material or hide these markings from view in the completed structure. Where neither method is possible, remove mill marks by grinding and filling surfaces as approved by Architect.
- 18. Grind butt and plug welds smooth or fill, removing weld splatter exposed to view.
- 19. Orient HSS seams as indicated or away from view.
- 20. Align and match abutting member cross sections.
- 21. At visible open joints of copes, miters, and cuts, maintain uniform clear gaps of 1/8 inch (3.2 mm). At closed joints, maintain uniform contact within 1/16 inch (1.6 mm).
- 22. Fabricate with exposed surfaces smooth, square, and of surface quality approved by Architect.
- 23. Treat HSS seams to appear seamless.
- 24. Contour and blend welds and weld transitions between members, removing splatter exposed to view.
- 25. Fill surface imperfections with filler and sand smooth to achieve surface quality approved by Architect.
- 26. Minimize weld show-through and distortion on the opposite side of exposed connections by grinding to a smooth profile aligned with adjacent material.

2.4 FINISHING

- A. Surface Preparation of Ferrous Metals: Surface must be cured, clean, sound and free of mill scale, rust, oil, dirt, grease, and any other contamination, including salt deposits, which would interfere with the new coating adhesion. Surface may not be wet. Bare surfaces must be properly prepared prior to coating application.
 - 1. Power or hand washing is required to remove contamination.
 - 2. Use of a cleaner/degreaser is required to remove oil of grease.
 - 3. Cleaning residue must be completely rinsed from surfaces and surface allowed to dry.
 - 4. Abrasive blast new steel to SSPC-SP-10 Near-White Blast Cleaning to achieve a 1.5 to 2.0 mil profile.
 - 5. Blast surface to be primed before flast rusing occurs.
- B. Primer: PPG; Amercoat 68HS Zinc Rich Epoxy Primer; one coat application at 3.0 to 5.0 mils DFT (over blast profile).
- C. Top Coat: PPG; Amercoat PSX700 Engineered Siloxane Coating; one coat application at 3.0 mil DFT.
- D. Total Dry Film Thickness: 6.0 mils DFT.
- E. Color to be selected by Architect from manufacturer's full range of colors.

PART 3 - EXECUTION

- 3.1 EXAMINATION
 - A. Acceptance of Surfaces and Conditions:
 - 1. Examine substrates, areas, and conditions to verify actual locations, dimensions, and other conditions affecting performance of the Work.
 - 2. Proceed with installation only after unsatisfactory conditions have been corrected.
 - 3. Starting work within a particular area will be construed as acceptance of surface conditions.

3.2 INSTALLATION

- A. General:
 - 1. Comply with manufacturer's written installation instructions.
 - 2. Install components plumb and true in alignment with established lines and grades, and without warp or rack.
 - 3. Commence installation near final stage of construction to avoid glass damage and provide optimum sealant application environment.
 - 4. Avoid point loading or contact with hard materials. Use bushings and gaskets as necessary to prevent glass to metal contract.
 - 5. Orient bolt heads in direction indicated on shop drawings. Where bolt head alignment is specified, orientation must be noted for each connection on the installation drawings. Where not noted, orient all bolt heads in each connection to the same side.
 - 6. Field welding: If required, field welding must be of same quality as shop welds, with appropriate visual appearance for AESS requirements.
 - 7. **Fully tighten all bolts.**
 - 8. Locate setting blocks, if required, at quarter points of the sill but no closer than six inches to the corners of each glass pane.
- B. Install fittings and anchor to support structure.
- C. Inspect each unit of glass immediately before installation. Glass which has significant impact damage at edges, scratches or abrasion of faces, or any other evidence of damage shall not be installed.

D. Glass Installation:

- 1. Set glass in a manner which produces greatest possible degree of uniformity in appearance.
- 2. Ensure that neoprene spacers separate attachment plates from glass.
- 3. Glass must be faced in a matching direction. Remove all stickers and adhesives.
- 4. Tool exposed surface of glazing materials.

5. Field modification of glass is not permitted.

- E. Sealant Application:
 - 1. Comply with sealant manufacturer's written application instructions.
 - 2. Ensure sealant bonding surfaces are sound, clean, dry and free of contamination.
 - 3. Clean glass edges with cleaner recommended by manufacturer.
 - 4. Apply sealant by hand gun or pressure equipment.
 - 5. Tool joints concave to provide smooth surface and full contact.
 - 6. Cure sealants in accordance with the manufacturer's instructions to attain maximum durability and adhesion to glass.
 - 7. Remove excess sealant from the glass and support members immediately after application. Use only cleaners or solvents approved by manufacturers of system.

END OF SECTION 107313

SECTION 250000 - INSTRUMENTATION AND CONTROL FOR HVAC

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. Division 20 for mechanical and electrical requirements
 - 2. Division 23 for common work results for hvac
 - 3. Division 23 for common motor requirements
 - 4. Division 23 for laboratory air control system
 - 5. Division 23 for hvac water treatment
 - 6. Division 23 for variable frequency drives
 - 7. Division 23 for air terminal units
 - 8. Division 23 for heat exchangers for hvac
 - 9. Division 23 for air handling units
 - 10. Division 23 for fan coil units
 - 11. Division 23 for finned tube radiation
 - 12. Division 23 for propeller unit heaters
 - 13. Division 23 for humidifiers
 - 14. Sections reference in following article of this section that may not be listed above.

1.2 SUMMARY

- A. This Section includes control equipment for HVAC systems and components, including control components for terminal heating and cooling units not supplied with factory-wired controls.
- B. This section includes the enabling/disabling, monitoring, alarming, set point reset and measure variable signaling of equipment equipped with manufacturer's based controller (OEM Controller).
- C. The instrumentation and control system shall be comprised of Java Application Control Engine (JACE) controllers within the building. The JACE shall connect to the UNCC existing network. Access to the system shall be accomplished through a standard Web browser via the internet and/or local area network. The JACE shall communicate directly with LonMark/LonTalk (IDC), BACnet (IBC), MODBUS or other open or legacy protocol system/devices.

- D. JACEs shall have surge protection and protected via UPS. BACnet and control trunks shall be protected by single pair (two-wire) *V Din Rail Dataline Surge protectors or equal. Electrical meters shall be protected by surge protectors.
- E. JACEs shall be version 4.5.96.28.1 or the current version of the UNCC web supervisor. Confirm with UNCC FIS during commissioning.
- F. The instrumentation and control system shall be based on the Niagara AX Framework (Niagara AX), a Java based framework developed by Tridium.
- 1.3 DEFINITIONS
 - A. DDC: Direct digital control.
 - B. I/O: Input/output.
 - C. MS/TP: Master slave/token passing.
 - D. PC: Personal computer.
 - E. PID: Proportional plus integral plus derivative.
 - F. RTD: Resistance temperature detector.
 - G. BACnet: a building automation and control networking protocol established by ASHRAE as Standard 135.
- 1.4 SYSTEM PERFORMANCE
 - A. Comply with the following performance requirements:
 - 1. Graphic Display: Display graphic with minimum 20 dynamic points with current data within 10 seconds.
 - 2. Graphic Refresh: Update graphic with minimum 20 dynamic points with current data within 8 seconds.
 - 3. Object Command: Reaction time of less than two seconds between operator command of a binary object and device reaction.
 - 4. Object Scan: Transmit change of state and change of analog values to control units or workstation within six seconds.
 - 5. Alarm Response Time: Annunciate alarm at workstation within 45 seconds. Multiple workstations must receive alarms within five seconds of each other.
 - 6. Program Execution Frequency: Run capability of applications as often as five seconds, but selected consistent with mechanical process under control.
 - 7. Performance: Programmable controllers shall execute DDC PID control loops, and scan and update process values and outputs at least once per second.
 - 8. Reporting Accuracy and Stability of Control: Report values and maintain measured variables within tolerances as follows:
 - a. Water Temperature: Plus or minus 1 deg F.
 - b. Water Flow: Plus or minus 5 percent of full scale.
 - c. Water Pressure: Plus or minus 2 percent of full scale.
 - d. Space Temperature: Plus or minus 1 deg F.
 - e. Ducted Air Temperature: Plus or minus 1 deg F.
 - f. Outside Air Temperature: Plus or minus 2 deg F.

- g. Dew Point Temperature: Plus or minus 3 deg F.
- h. Temperature Differential: Plus or minus 0.25 deg F.
- i. Relative Humidity: Plus or minus 5 percent.
- j. Airflow (Pressurized Spaces): Plus or minus 3 percent of full scale.
- k. Airflow (Measuring Stations): Plus or minus 5 percent of full scale.
- I. Airflow (Terminal): Plus or minus 10 percent of full scale.
- m. Air Pressure (Space): Plus or minus 0.01-inch wg.
- n. Air Pressure (Ducts): Plus or minus 0.1-inch wg.
- o. Carbon Monoxide: Plus or minus 5 percent of reading.
- p. Carbon Dioxide: Plus or minus 50 ppm.
- q. Electrical: Plus or minus 5 percent of reading.
- B. All BACnet network switches shall be Contemporary Controls Skorpion Switch 10/100/1000 or approved equal. 10BASE-T/100BASE-TX/100BASE-FX compliant 1000BASE-T (GT models) Auto-MDIX on all copper ports Auto-negotiated data rate, duplex and flow control on twisted-pair ports, DIN-rail mountable Full or half-duplex Activity/link and data rate LEDs Industrial environment EMC CE Mark UL 508 Listed, C-UL Listed Industrial Control Equipment. 10-36 VDC or 24 VAC (± 10%) 47-63 Hz Power is provided through a quick-disconnect terminal strip.
- 1.5 SEQUENCE OF OPERATION
 - A. Sequences of operation shall be as shown on the drawings.
- 1.6 ACTION SUBMITTALS
 - A. Product Data: Include manufacturer's technical literature for each control device. Indicate dimensions, capacities, performance characteristics, electrical characteristics, finishes for materials, and installation and startup instructions for each type of product indicated.
 - 1. DDC System Hardware: Bill of materials of equipment indicating quantity, manufacturer, and model number. Include technical data for operator workstation equipment, interface equipment, control units, transducers/transmitters, sensors, actuators, valves, relays/switches, control panels, and operator interface equipment.
 - 2. Control System Software: Include technical data for operating system software, operator interface, color graphics, and other third-party applications.
 - 3. Controlled Systems: Instrumentation list with element name, type of device, manufacturer, model number, and product data. Include written description of sequence of operation including schematic diagram.
 - B. Shop Drawings: Detail equipment assemblies and indicate dimensions, weights, loads, required clearances, method of field assembly, components, and location and size of each field connection.
 - 1. Bill of materials of equipment indicating quantity, manufacturer, and model number.
 - 2. Schematic flow diagrams showing fans, pumps, coils, dampers, valves, and control devices.
 - 3. Wiring Diagrams: Power, signal, and control wiring.

- 4. Wiring layouts showing the order in which equipment is connected
- 5. Details of control panel faces, including controls, instruments, and labeling.
- 6. Written description of sequence of operation.
- 7. Schedule of dampers including size, leakage, and flow characteristics.
- 8. Schedule of valves including flow characteristics.
- 9. DDC System Hardware:
 - a. Wiring diagrams for control units with termination numbers.
 - b. Schematic diagrams and floor plans for field sensors and control hardware.
 - c. Schematic diagrams for control, communication, and power wiring, showing trunk data conductors and wiring between operator workstation and control unit locations.
- 10. Control System Software: List of color graphics indicating monitored systems, data (connected and calculated) point addresses, output schedule, and operator notations.
- 11. Controlled Systems:
 - a. Schematic diagrams of each controlled system with control points labeled and control elements graphically shown, with wiring.
 - b. Scaled drawings showing mounting, routing, and wiring of all elements of the control system including instruments, sensors, panels, etc. including bases and special construction.
 - c. Written description of sequence of operation including schematic diagram.
 - d. Points list.
- 12. Shop drawings will include and identify ant=y interface and interoperability between the BAS and laboratory air control system, OEM equipment controllers and laboratory equipment monitoring systems.
- C. Samples for Initial Selection: For each color required, of each type of thermostat or sensor cover with factory-applied color finishes.
- D. Samples for Verification: For each color required, of each type of thermostat or sensor cover.
- E. Shop drawings will be reviewed by the Owner prior to acceptance.
- F. Shop drawings shall be submitted in PDF and Visio format.

1.7 INFORMATIONAL SUBMITTALS

- A. Data Communications Protocol Certificates: Certify that each proposed DDC system component complies with ASHRAE 135 (BACnet).
- B. Qualification Data: For Installer and manufacturer.
- C. Software Upgrade Kit: For Owner to use in modifying software to suit future systems revisions or monitoring and control revisions.
- D. Field quality-control test reports.

1.8 CLOSEOUT SUBMITTALS

- A. Operation and Maintenance Data: For HVAC instrumentation and control system to include in emergency, operation, and maintenance manuals. Manuals shall be provided in searchable PDF format. In addition to items specified in Division 01, Operation and Maintenance Data, include the following:
 - 1. Maintenance instructions and lists of spare parts for each type of control device and compressed-air station.
 - 2. Interconnection wiring diagrams with identified and numbered system components and devices.
 - 3. Keyboard illustrations and step-by-step procedures indexed for each operator function.
 - 4. Inspection period, cleaning methods, cleaning materials recommended, and calibration tolerances.
 - 5. Calibration records and list of set points.
- B. Software and Firmware Operational Documentation: Include the following:
 - 1. Software operating and upgrade manuals.
 - 2. Program Software Backup: On a magnetic media or compact disc, complete with data files.
 - 3. Device address list.
 - 4. Printout of software application and graphic screens.
 - 5. Software license required by and installed for DDC workstations and control systems.
- 1.9 QUALITY ASSURANCE
 - **A.** Installer Qualifications: Automatic control system manufacturer's authorized representative who is trained and approved for installation of system components required for this Project.
 - B. Application engineers working on this project shall be certified by the DDC controls manufacturer to perform all engineering services. The Systems shall be installed by trained mechanics either in direct employ of Systems Integrator or by subcontractors who are under direct supervision of Systems Integrator's field representative. Submit resumes of application engineers and field supervisors to be assigned to this project within 30 days after contract award. Application engineers shall have prior experience with at least 5 similar full BAS renovation types of projects within 5 years. Owner and Architect reserve right to exclude any engineers or field supervisors whose past experience is not sufficient to meet the needs of the project.
 - C. Application engineers labor shall include, but is not limited to:
 - 1. Engineering services to size all valve and dampers based on design criteria specified.
 - 2. Engineering services to produce all submittals requested and working construction drawings and record drawings as specified herein.
 - 3. Engineering services for all software programming specified.

- 4. Project management services with single point contact to coordinate all construction related activities.
- 5. Field mechanics for installation of control wiring and related control devices.
- 6. Field technicians to start-up, calibrate, adjust and tune all control loops per specification.
- 7. Field technicians to perform system checkout, testing and complete required reports.
- 8. Full time field supervisor during controls installation and start-up and commissioning.
- 9. Field technicians to assist testing and balancing contractor in adjusting controls and determining set points related to his scope of work.
- 10. Field representatives and/or classroom instructors to provide Owner training as specified.
- 11. Complete installation of all control devices, except as noted, wiring terminations at panel locations to accomplish control sequences specified in this project manual or on drawings.
- 12. Responsible for any additional instrumentation described in any point schedules found in this contract document, which may not be directly related to any specified control sequences.
- A.D. The certified systems integrator is responsible for providing interface of existing campus control network to the control system and total integration of the facility infrastructure systems with browser access to all system data both locally and over a secure Intranet within the campus, and by remote access by a standard Web Browser over the Internet. The scope shall include HVAC control and tuning, electrical, gas and water metering, energy management, alarm monitoring, and all trending, reporting and maintenance management functions related to normal building operations all as indicated on the drawings or elsewhere in this specification
- B.E. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, Article 100, by a testing agency acceptable to authorities having jurisdiction, and marked for intended use.
- **C.F.** Comply with ASHRAE 135 for DDC system components.
- 1.10 DELIVERY, STORAGE, AND HANDLING
 - A. Factory-Mounted Components: Where control devices specified in this Section are indicated to be factory mounted on equipment, arrange for shipping of control devices to equipment manufacturer.
 - B. System Software: Update to latest version of software at Project completion.

1.11 COORDINATION

- A. Coordinate location of thermostats, humidistats, and other exposed control sensors with plans and room details before installation.
- B. Coordinate equipment with Division 28, Digital, Addressable Fire-Alarm System and Division 28, Zoned (DC Loop) Fire-Alarm System to achieve compatibility with equipment that interfaces with that system.
- C. Coordinate supply of conditioned electrical branch circuits for control units
- D. Coordinate equipment with Division 26, Electrical Power Monitoring and Control to achieve compatibility of communication interfaces.
- E. Coordinate equipment with Division 26, Panelboards to achieve compatibility with starter coils and annunciation devices.
- F. Coordinate size and location of concrete bases. Cast anchor-bolt inserts into bases. Concrete, reinforcement, and formwork requirements are specified in Division 03, Castin-Place Concrete.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. In other Part 2 articles where titles below introduce lists, the following requirements apply to product selection:
 - 1. Manufacturers: Subject to compliance with requirements, provide products by one of the manufacturers specified.
- 2.2 CONTROL SYSTEM
 - A. Available Manufacturers:
 - 1. Johnson Controls Incorporate Facilities Explorer (JCI FX) using open protocol BACnet.
 - 2. Alerton BACtalk product line BACnetPlatinum Building Automation.
 - 3. Schneider Electric Controls Invensys I/A series BACnet. (Owner Preference, see Alternate 07).
 - B. Control system shall consist of sensors, indicators, actuators, final control elements, interface equipment, other apparatus, and accessories to control mechanical systems.
 - C. Control system shall consist of sensors, indicators, actuators, final control elements, interface equipment, other apparatus, accessories, and software connected to distributed controllers operating in multiuser, multitasking environment on token-passing network and programmed to control mechanical systems. An operator workstation permits interface with the network via dynamic color graphics with each mechanical system, building floor plan, and control device depicted by point-and-click graphics.

- D. Controls contractor shall export tag all graphics and join them to the web supervisor. Contactor to bring all utilized points into Fin Stack. Points shall be tagged and renamed to match haystack and UNCC model.
- E. Proposed graphics shall be submitted to UNCC for review and approval prior to acceptance.
- 2.3 DDC EQUIPMENT
 - A. Operator Workstation: Not Required
 - B. Control Units: Modular, comprising processor board with programmable, nonvolatile, random-access memory; local operator access and display panel; integral interface equipment; and backup power source.
 - 1. Units monitor or control each I/O point; process information; execute commands from other control units, devices, and operator stations; and download from or upload to operator workstation or diagnostic terminal unit.
 - 2. Stand-alone mode control functions operate regardless of network status. Functions include the following:
 - a. Global communications.
 - b. Discrete/digital, analog, and pulse I/O.
 - c. Monitoring, controlling, or addressing data points.
 - d. Software applications, scheduling, and alarm processing.
 - e. Testing and developing control algorithms without disrupting field hardware and controlled environment.
 - 3. Standard Application Programs:
 - a. Electric Control Programs: Demand limiting, duty cycling, automatic time scheduling, start/stop time optimization, night setback/setup, on-off control with differential sequencing, staggered start, antishort cycling, PID control, DDC with fine tuning, and trend logging.
 - b. HVAC Control Programs: Optimal run time, supply-air reset, and enthalpy switchover.
 - c. Chiller Control Programs: Control function of condenser-water reset, chilled-water reset, and equipment sequencing.
 - d. Programming Application Features: Include trend point; alarm processing and messaging; weekly, monthly, and annual scheduling; energy calculations; run-time totalization; and security access.
 - e. Remote communications.
 - f. Maintenance management.
 - g. Units of Measure: Inch-pound and SI (metric).
 - 4. Local operator interface provides for download from or upload to operator workstation or diagnostic terminal unit.
 - 5. ASHRAE 135 Compliance (BACnet): Control units shall use ASHRAE 135 protocol and communicate using ISO 8802-3 (Ethernet) datalink/physical layer protocol.

- C. Local Control Units: Modular, comprising processor board with electronically programmable, nonvolatile, read-only memory; and backup power source.
 - 1. Units monitor or control each I/O point, process information, and download from or upload to operator workstation or diagnostic terminal unit.
 - 2. Stand-alone mode control functions operate regardless of network status. Functions include the following:
 - a. Global communications.
 - b. Discrete/digital, analog, and pulse I/O.
 - c. Monitoring, controlling, or addressing data points.
 - 3. Local operator interface provides for download from or upload to operator workstation or diagnostic terminal unit.
 - 4. ASHRAE 135 Compliance (BACnet): Control units shall use ASHRAE 135 protocol and communicate using ISO 8802-3 (Ethernet) datalink/physical layer protocol.
- D. I/O Interface: Hardwired inputs and outputs may tie into system through controllers. Protect points so that shorting will cause no damage to controllers.
 - 1. Binary Inputs: Allow monitoring of on-off signals without external power.
 - 2. Pulse Accumulation Inputs: Accept up to 10 pulses per second.
 - 3. Analog Inputs: Allow monitoring of low-voltage (0- to 10-V dc), current (4 to 20 mA), or resistance signals.
 - 4. Binary Outputs: Provide on-off or pulsed low-voltage signal, selectable for normally open or normally closed operation with three-position (on-off-auto) override switches and status lights.
 - 5. Analog Outputs: Provide modulating signal, either low voltage (0- to 10-V dc) or current (4 to 20 mA) with status lights, two-position (auto-manual) switch, and manually adjustable potentiometer.
 - 6. Tri-State Outputs: Provide two coordinated binary outputs for control of threepoint, floating-type electronic actuators.
 - 7. Universal I/Os: Provide software selectable binary or analog outputs.
- E. Power Supplies: Transformers with Class 2 current-limiting type or overcurrent protection; limit connected loads to 80 percent of rated capacity. DC power supply shall match output current and voltage requirements and be full-wave rectifier type with the following:
 - 1. Output ripple of 5.0 mV maximum peak to peak.
 - 2. Combined 1 percent line and load regulation with 100-mic.sec. response time for 50 percent load changes.
 - 3. Built-in overvoltage and overcurrent protection and be able to withstand 150 percent overload for at least 3 seconds without failure.
- F. Power Line Filtering: Internal or external transient voltage and surge suppression for workstations or controllers with the following:
 - 1. Minimum dielectric strength of 1000 V.
 - 2. Maximum response time of 10 nanoseconds.
 - 3. Minimum transverse-mode noise attenuation of 65 dB.

4. Minimum common-mode noise attenuation of 150 dB at 40 to 100 Hz.

2.4 UNITERRUPTIBLE POWER SUPPLY

- A. Entire BAS network including controllers, input devices, output devices, alarms, safeties, actuators, instrumentation etc. shall be operational on BAS contractor provided online double conversion uninterruptible power supply (UPS). The entire network, control system and sequences of operation described in the documents shall be fully operational (it is understood that some mechanical devices such as fan and pumps may not have power while the BAS is operating on its UPS) while operating on the UPS for at least 15 minutes.
 - 1. Capacity (VA or watts) and quantity of UPS units shall be determined by the contractor
 - 2. UPS shall be equipped with hard wired terminals, input and output
 - 3. UPS shall be true on-line, double conversion topology with integral automatic bypass
 - 4. Input:
 - a. Grounded single phase
 - b. Bypass voltage 96 to 138 VAC (user selectable)
 - c. Input voltage range 80 to 144 VAC
 - d. Input frequency 50/60 HZ auto sensing
 - e. AC frequency range 45 to 65 HZ
 - 5. Output
 - a. 110 to 127 VAC
 - b. +/- 2% voltage regulation
 - c. Less than 5% THD voltage distortion with non-linear loads
 - d. Less than 3% THD voltage distortion with linear loads
 - e. Frequency regulation of +/- 0.25 HZ while on battery or in free run mode
 - f. Dynamic response +/- 9% maximum form 100% to 20% or from 20% to 100% linear load
 - g. Overload capacity 100% to 125% for at least 60 seconds; 125% to 150% for at least 10 seconds.
 - 6. Operating temperature range -40 degrees F to 140 degrees F.

2.5 UNITARY CONTROLLERS

A. Unitized, capable of stand-alone operation with sufficient memory to support its operating system, database, and programming requirements, and with sufficient I/O capacity for the application.

- 1. Configuration: Local keypad and display; diagnostic LEDs for power, communication, and processor; wiring termination to terminal strip or card connected with ribbon cable; memory with bios; and 72-hour battery backup.
- 2. Operating System: Manage I/O communication to allow distributed controllers to share real and virtual object information and allow central monitoring and alarms.Perform automatic system diagnostics; monitor system and report failures.
- 3. ASHRAE 135 Compliance (BACnet): Communicate using read (execute and initiate) and write (execute and initiate) property services defined in ASHRAE 135. Reside on network using MS/TP datalink/physical layer protocol and have service communication port for connection to diagnostic terminal unit.
- 4.
- 5. Enclosure: Dustproof rated for operation at 32 to 120 deg F.
- 6. Enclosure: Waterproof rated for operation at 40 to 150 deg F.

2.6 ALARM PANELS

- A. Unitized cabinet with suitable brackets for wall or floor mounting. Fabricate of 0.06inch- thick, furniture-quality steel or extruded-aluminum alloy, totally enclosed, with hinged doors and keyed lock and with manufacturer's standard shop-painted finish.
- B. Indicating light for each alarm point, single horn, acknowledge switch, and test switch, mounted on hinged cover.
 - 1. Alarm Condition: Indicating light flashes and horn sounds.
 - 2. Acknowledge Switch: Horn is silent and indicating light is steady.
 - 3. Second Alarm: Horn sounds and indicating light is steady.
 - 4. Alarm Condition Cleared: System is reset and indicating light is extinguished.
 - 5. Contacts in alarm panel allow remote monitoring by independent alarm company.

2.7 ANALOG CONTROLLERS

- A. Step Controllers: 6- or 10-stage type, with heavy-duty switching rated to handle loads and operated by electric motor.
- B. Electric, Outdoor-Reset Controllers: Remote-bulb or bimetal rod-and-tube type, proportioning action with adjustable throttling range, adjustable set point, scale range minus 10 to plus 70 deg F, and single- or double-pole contacts.
- C. Electronic Controllers: Wheatstone-bridge-amplifier type, in steel enclosure with provision for remote-resistance readjustment. Identify adjustments on controllers, including proportional band and authority.
 - 1. Single controllers can be integral with control motor if provided with accessible control readjustment potentiometer.

2.8 ELECTRONIC SENSORS

- A. Description: Vibration and corrosion resistant; for wall, immersion, or duct mounting as required.
- B. Thermistor Temperature Sensors and Transmitters:

The University of North Carolina Charlotte Science Building Bid Documents (Add #3)

- 1. Manufacturers:
 - a. BEC Controls Corporation.
 - b. Ebtron, Inc.
 - c. Heat-Timer Corporation.
 - d. I.T.M. Instruments Inc.
 - e. MAMAC Systems, Inc.
 - f. RDF Corporation.
- 2. Accuracy: Plus or minus 0.5 deg F at calibration point.
- 3. Wire: Twisted, shielded-pair cable.
- 4. Insertion Elements in Ducts: Single point, 18 inches long; use where not affected by temperature stratification or where ducts are smaller than 9 sq. ft..
- 5. Averaging Elements in Ducts: 72 inches long, flexible; use where prone to temperature stratification or where ducts are larger than 10 sq. ft..
- 6. Insertion Elements for Liquids: Brass or stainless-steel socket with minimum insertion length of 2-1/2 inches.
- 7. Private Offices and Conference Rooms, Room Sensor Cover Construction shall be manufacturer's standard locking covers
 - a. Display of measured variable
 - b. Adjustment knob in units of measured variable (3-5 degrees of deadband).
 - c. Occupancy override button (momentary contact)
 - d. Color: Ivory
 - e. Orientation: horizontal
- 8. Other than Private Offices and Conference rooms, Room Sensor Cover Construction shall be Manufacturer's standard locking covers.
 - a. No display of measure variable
 - b. "warmer/cooler" adjustment knob
 - c. Occupancy override button (momentary contact).
 - d. Color: Ivory.
 - e. Orientation: Horizontal.
- 9. Outside-Air Sensors: Watertight inlet fitting, shielded from direct sunlight.
- 10. Room Security Sensors: Stainless-steel cover plate with insulated back and security screws.
- C. RTDs and Transmitters:
 - 1. Manufacturers:
 - a. BEC Controls Corporation.
 - b. MAMAC Systems, Inc.
 - c. RDF Corporation.
 - 2. Accuracy: Plus or minus 0.2 percent at calibration point.
 - 3. Wire: Twisted, shielded-pair cable.

- 4. Insertion Elements in Ducts: Single point, 18 inches long; use where not affected by temperature stratification or where ducts are smaller than 9 sq. ft..
- 5. Averaging Elements in Ducts: 48 inches long, rigid; use where prone to temperature stratification or where ducts are larger than 9 sq. ft.; length as required.
- 6. Insertion Elements for Liquids: Brass socket with minimum insertion length of 2-1/2 inches.
- 7. Room Sensor Cover Construction: Manufacturer's standard locking covers.
 - a. No display of measure variable
 - b. "warmer/cooler" adjustment knob
 - c. Occupancy override button
 - d. Color: Ivory
 - e. Orientation: Horizontal.
- 8. Outside-Air Sensors: Watertight inlet fitting, shielded from direct sunlight.
- 9. Room Security Sensors: Stainless-steel cover plate with insulated back and security screws.
- D. Humidity Sensors: Bulk polymer sensor element.
 - 1. Manufacturers:
 - a. BEC Controls Corporation.
 - b. General Eastern Instruments.
 - c. MAMAC Systems, Inc.
 - d. ROTRONIC Instrument Corp.
 - e. TCS/Basys Controls.
 - f. Vaisala.
 - 2. Accuracy: 5 percent full range with linear output.
 - 3. Room Sensor Range: 20 to 80 percent relative humidity.
 - 4. Room Sensor Cover Construction: Manufacturer's standard locking covers.
 - a. No display of measure variable
 - b. "higher/lower RH" adjustment knob
 - c. Occupancy override button
 - d. Color: Ivory.
 - e. Orientation: Horizontal.
 - 5. Duct Sensor: 20 to 80 percent relative humidity range with element guard and mounting plate.
 - 6. Outside-Air Sensor: 20 to 80 percent relative humidity range with mounting enclosure, suitable for operation at outdoor temperatures of minus 22 to plus 185 deg F.
 - 7. Duct and Sensors: With element guard and mounting plate, range of 0 to 100 percent relative humidity.
- E. Pressure Transmitters/Transducers:
 - 1. Manufacturers:

- a. BEC Controls Corporation.
- b. General Eastern Instruments.
- c. MAMAC Systems, Inc.
- d. ROTRONIC Instrument Corp.
- e. TCS/Basys Controls.
- f. Vaisala.
- 2. Static-Pressure Transmitter: Nondirectional sensor with suitable range for expected input, and temperature compensated.
 - a. Accuracy: 2 percent of full scale with repeatability of 0.5 percent.
 - b. Output: 4 to 20 mA.
 - c. Building Static-Pressure Range: 0- to 0.25-inch wg.
 - d. Duct Static-Pressure Range: 0- to 5-inch wg.
- 3. Water Pressure Transducers: Stainless-steel diaphragm construction, suitable for service; minimum 150-psig operating pressure; linear output 4 to 20 mA.
- 4. Water Differential-Pressure Transducers: Stainless-steel diaphragm construction, suitable for service; minimum 150-psig operating pressure and tested to 300-psig; linear output 4 to 20 mA.
- 5. Differential-Pressure Switch (Air or Water): Snap acting, with pilot-duty rating and with suitable scale range and differential.
- 6. Pressure Transmitters: Direct acting for gas, liquid, or steam service; range suitable for system; linear output 4 to 20 mA.

2.9 STATUS SENSORS

- A. Status Inputs for Fans: Differential-pressure switch with pilot-duty rating and with adjustable range of 0- to 5-inch wg.
- B. Status Inputs for Pumps: Differential-pressure switch with pilot-duty rating and with adjustable pressure-differential range of 8 to 60 psig, piped across pump.
- C. Status Inputs for Electric Motors: Comply with ISA 50.00.01, current-sensing fixed- or split-core transformers with self-powered transmitter, adjustable and suitable for 175 percent of rated motor current.
- D. Voltage Transmitter (100- to 600-V ac): Comply with ISA 50.00.01, single-loop, self-powered transmitter, adjustable, with suitable range and 1 percent full-scale accuracy.
- E. Power Monitor: 3-phase type with disconnect/shorting switch assembly, listed voltage and current transformers, with pulse kilowatt hour output and 4- to 20-mA kW output, with maximum 2 percent error at 1.0 power factor and 2.5 percent error at 0.5 power factor.
- F. Current Switches: Self-powered, solid-state with adjustable trip current, selected to match current and system output requirements.
- G. Electronic Valve/Damper Position Indicator: Visual scale indicating percent of travel and 2- to 10-V dc, feedback signal.
- H. Water-Flow Switches: Bellows-actuated mercury or snap-acting type with pilot-duty rating, stainless-steel or bronze paddle, with appropriate range and differential adjustment, in NEMA 250, Type 1 enclosure.

2.10 GAS DETECTION EQUIPMENT

- A. Manufacturers:
 - 1. B. W. Technologies.
 - 2. Ebtron, Inc.
 - 3. Honeywell International Inc.; Home & Building Control.
 - 4. TSI Incorporated.
 - 5. Vaisala.
- B. Carbon Dioxide Sensor and Transmitter: Single detectors using solid-state infrared sensors; suitable over a temperature range of 23 to 130 deg F and calibrated for 0 to 2 percent, with continuous or averaged reading, 4- to 20-mA output;, for wall mounting.
- 2.11 FLOW MEASURING STATIONS
 - A. Duct Airflow Station: Combination of air straightener and multiport, self-averaging pitot tube station.
 - 1. Manufacturers:
 - a. Air Monitor Corporation.
 - b. Wetmaster Co., Ltd.
 - c. Ruskin
 - 2. Casing: Galvanized-steel frame.
 - 3. Flow Straightener: Aluminum honeycomb, 3/4-inch parallel cell, 3 inches deep.
 - 4. Sensing Manifold: Copper manifold with bullet-nosed static pressure sensors positioned on equal area basis.
- 2.12 HUMIDISTATS
 - A. Manufacturers:
 - 1. MAMAC Systems, Inc.
 - 2. ROTRONIC Instrument Corp.
 - 3. Honeywell
 - B. Duct-Mounting Humidistats: Electric insertion, 2-position type with adjustable, 2 percent throttling range, 20 to 80 percent operating range, and single- or double-pole contacts.
- 2.13 ACTUATORS
 - A. Manufacturers shall be limited to
 - 1. Belimo Aircontrols (USA), Inc.
 - B. Electric Motors: Size to operate with sufficient reserve power to provide smooth modulating action or two-position action.

- 1. Comply with requirements in Division 23, Common Motor Requirements for HVAC Equipment.
- 2. Permanent Split-Capacitor or Shaded-Pole Type: Gear trains completely oil immersed and sealed. Equip spring-return motors with integral spiral-spring mechanism in housings designed for easy removal for service or adjustment of limit switches, auxiliary switches, or feedback potentiometer.
- 3. Nonspring-Return Motors for Valves Larger Than NPS 2-1/2: Size for running torque of 150 in. x lbf and breakaway torque of 300 in. x lbf.
- 4. Spring-Return Motors for Valves Larger Than NPS 2-1/2: Size for running and breakaway torque of 150 in. x lbf.
- 5. Nonspring-Return Motors for Dampers Larger Than 25 Sq. Ft.: Size for running torque of 150 in. x lbf and breakaway torque of 300 in. x lbf.
- 6. Spring-Return Motors for Dampers Larger Than 25 Sq. Ft.: Size for running and breakaway torque of 150 in. x lbf.
- C. Electronic Actuators: Direct-coupled type designed for minimum 60,000 full-stroke cycles at rated torque.
 - 1. Valves: Size for torque required for valve close off at maximum pump differential pressure.
 - 2. Dampers: Size for running torque calculated as follows:
 - a. Parallel-Blade Damper with Edge Seals: 7 inch-lb/sq. ft. of damper.
 - b. Opposed-Blade Damper with Edge Seals: 5 inch-lb/sq. ft. of damper.
 - c. Parallel-Blade Damper without Edge Seals: 4 inch-lb/sq. ft of damper.
 - d. Opposed-Blade Damper without Edge Seals: 3 inch-lb/sq. ft. of damper.
 - e. Dampers with 2- to 3-Inch wg of Pressure Drop or Face Velocities of 1000 to 2500 fpm: Increase running torque by 1.5.
 - f. Dampers with 3- to 4-Inch wg of Pressure Drop or Face Velocities of 2500 to 3000 fpm: Increase running torque by 2.0.
 - 3. Coupling: V-bolt and V-shaped, toothed cradle.
 - 4. Overload Protection: Electronic overload or digital rotation-sensing circuitry.
 - 5. Fail-Safe Operation: Mechanical, spring-return mechanism. Provide external, manual gear release on nonspring-return actuators.
 - 6. Power Requirements (Two-Position Spring Return): Maximum 10 VA at 24-V ac or 8 W at 24-V dc.Power Requirements (Modulating): Maximum 10 VA at 24-V ac or 8 W at 24-V dc.
 - 7. Proportional Signal: 2- to 10-V dc or 4 to 20 mA, and 2- to 10-V dc position feedback signal.
 - 8. Temperature Rating: Minus 22 to plus 122 deg F.
 - 9. Temperature Rating (Smoke Dampers): Minus 22 to plus 250 deg F.
 - 10. Run Time: 12 seconds open, 5 seconds closed.
 - 11. Inlet-Vane Operators: High pressure, with pilot positioners.
- 2.14 CONTROL VALVES
 - A. Manufacturers, other than valves serving equipment noted below shall be:
 - 1. Danfoss Inc.; Air Conditioning & Refrigeration Div.
 - 2. Erie Controls.

- 3. Hayward Industrial Products, Inc.
- 4. Magnatrol Valve Corporation.
- 5. Neles-Jamesbury.
- B. Manufacturers of 2-way control valves serving air handling units, chilled beams and fan coil units shall be limited to:
 - 1. Belimo Aircontrols Inc. Energy Valves.
- C. Control Valves: Factory fabricated, of type, body material, and pressure class based on maximum pressure and temperature rating of piping system, unless otherwise indicated.
 - 1. PICCV control valves shall be used for control of all chilled water, heating hot water and energy recovery valves at the air handler coils and service entrance heat exchangers.
 - 2. Control valves serving heating hot water re-heat coils shall be one of the three options below. Contractor to identifying costs associated with each slection.
 - a. PICCV control valves
 - b. Belimo PIQCV valves
 - c. Conventional pressure dependent valves.
- D. Hydronic system globe valves shall have the following characteristics:
 - 1. NPS 2 and Smaller: Class 250 bronze body, bronze trim, rising stem, renewable composition disc, and screwed ends with backseating capacity repackable under pressure.
 - 2. NPS 2-1/2 and Larger: Class 125 iron body, bronze trim, rising stem, plug-type disc, flanged ends, and renewable seat and disc.
 - 3. Internal Construction: Replaceable plugs and stainless-steel or brass seats.
 - a. Single-Seated Valves: Cage trim provides seating and guiding surfaces for plug on top and bottom.
 - b. Double-Seated Valves: Balanced plug; cage trim provides seating and guiding surfaces for plugs on top and bottom.
 - 4. Sizing: 5-psig maximum pressure drop at design flow rate or the following:
 - a. Two Position: Line size.
 - b. Two-Way Modulating: Either the value specified above or twice the load pressure drop, whichever is more.
 - c. Three-Way Modulating: Twice the load pressure drop, but not more than value specified above.
 - 5. Flow Characteristics: Two-way valves shall have equal percentage characteristics; three-way valves shall have linear characteristics.
 - 6. Close-Off (Differential) Pressure Rating: Combination of actuator and trim shall provide minimum close-off pressure rating of 150 percent of total system (pump) head for two-way valves and 100 percent of pressure differential across valve or 100 percent of total system (pump) head.

- E. Butterfly Valves: 200-psig, 150-psig maximum pressure differential, ASTM A 126 castiron or ASTM A 536 ductile-iron body and bonnet, extended neck, stainless-steel stem, field-replaceable EPDM or Buna N sleeve and stem seals.
 - 1. Body Style: Lug.
 - 2. Disc Type: Nickel-plated ductile iron.
 - 3. Sizing: 1-psig maximum pressure drop at design flow rate.
- F. Terminal Unit Control Valves: Bronze body, bronze trim, two or three ports as indicated, replaceable plugs and seats, and union and threaded ends.
 - 1. Rating: Class 125 for service at 125 psig and 250 deg F operating conditions.
 - 2. Sizing: 3-psig maximum pressure drop at design flow rate, to close against pump shutoff head.
 - 3. Flow Characteristics: Two-way valves shall have equal percentage characteristics; three-way valves shall have linear characteristics.

2.15 DAMPERS

- A. Manufacturers:
 - 1. Air Balance Inc.
 - 2. Ruskin.
 - 3. TAMCO (T. A. Morrison & Co. Inc.).
 - 4. United Enertech Corp.
 - 5. Vent Products Company, Inc.
- B. Dampers: AMCA-rated, opposed-blade design; 0.108-inch- minimum thick, galvanized-steel or 0.125-inch- minimum thick, extruded-aluminum frames with holes for duct mounting; damper blades shall not be less than 0.064-inch- thick galvanized steel with maximum blade width of 8 inches and length of 48 inches.
 - 1. Secure blades to 1/2-inch- diameter, zinc-plated axles using zinc-plated hardware, with oil-impregnated sintered bronze blade bearings, blade-linkage hardware of zinc-plated steel and brass, ends sealed against spring-stainless-steel blade bearings, and thrust bearings at each end of every blade.
 - 2. Operating Temperature Range: From minus 40 to plus 200 deg F.
 - 3. Edge Seals, Standard Pressure Applications: Closed-cell neoprene.
 - 4. Edge Seals, Low-Leakage Applications: Use inflatable blade edging or replaceable rubber blade seals and spring-loaded stainless-steel side seals, rated for leakage at less than 10 cfm per sq. ft. of damper area, at differential pressure of 4-inch wg when damper is held by torque of 50 in. x lbf; when tested according to AMCA 500D.
- 2.16 CONTROL CABLE
 - A. Electronic and fiber-optic cables for control wiring are specified in Division 27, Communications Horizontal Cabling.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Verify that conditioned power supply is available to control units and operator workstation.
- B. Verify that pneumatic piping and duct-, pipe-, and equipment-mounted devices are installed before proceeding with installation.
- 3.2 INSTALLATION
 - A. Install software in control units and operator workstation(s). Implement all features of programs to specified requirements and as appropriate to sequence of operation.
 - B. Connect and configure equipment and software to achieve sequence of operation specified.
 - C. Verify location of thermostats, humidistats, and other exposed control sensors with Drawings and room details before installation. Install devices as directed by Architect above the floor.
 - 1. Install averaging elements in ducts and plenums in crossing or zigzag pattern.
 - D. Install guards on thermostats in the following locations:
 - 1. Entrances.
 - 2. Public areas.
 - 3. Where indicated.
 - E. Install automatic dampers according to Division 23, Air Duct Accessories.
 - F. Install damper motors on outside of duct in warm areas, not in locations exposed to outdoor temperatures.
 - G. Install labels and nameplates to identify control components according to Division 23, Identification for HVAC Piping and Equipment.
 - H. Install hydronic instrument wells, valves, and other accessories according to Division 23, Hydronic Piping.

3.3 ELECTRICAL WIRING AND CONNECTION INSTALLATION

- A. Provide raceways, boxes, and cabinets necessary for a complete and functional system according to Division 26, Raceways and Boxes for Electrical Systems.
- B. Provide building wire and cable necessary for a complete and functional system according to Division 26, Low-Voltage Electrical Power Conductors and Cables.
- C. Provide signal and communication cable necessary for a complete and functional system according to Division 27, Communications Horizontal Cabling.
- D. General requirements

- 1. Conceal cable, except in mechanical rooms and areas where other conduit and piping are exposed.
- 2. Install all wiring and cables in raceway.
- 3. Bundle and harness multi-conductor instrument cable in place of single cables where several cables follow a common path.
- 4. Fasten flexible conductors, bridging cabinets and doors, along hinge side; protect against abrasion. Tie and support conductors.
- 5. Number-code or color-code conductors for future identification and service of control system, except local individual room control cables.
- 6. Install wire and cable with sufficient slack and flexible connections to allow for vibration of piping and equipment.
- E. Connect manual-reset limit controls independent of manual-control switch positions. Automatic duct heater resets may be connected in interlock circuit of power controllers.
- F. Connect hand-off-auto selector switches to override automatic interlock controls when switch is in hand position.
- G. All power for all products associated with the instrumentation and controls system shall be distributed by the instrumentation and controls contractor. The power shall come from circuits in electric panels provided by Division 26. Circuits for use by instrumentation and controls contractor shall be on emergency power. Circuits available for use are to be coordinated with the electrical contractor (Division 26) by the instrumentation and controls contractor.
 - 1. To accomplish this requirement, the instrumentation and controls contractor shall procure the services of an electrician with the proper credentials and licensed in the jurisdiction of the project.
 - a. At the instrumentation and controls contractor's option, the project electrical (division 26) contractor may be hired by the instrumentation and controls contractor to perform this work or another electrician with the proper credentials and licensed in the jurisdiction of the project may be hired by the instrumentation and controls contractor for these services or, if the instrumentation and control contractor has proper credentials and is licensed in the jurisdiction of the project to perform electrical work, the instrumentation and controls contractor may self-perform the necessary scope.
 - 2. The instrumentation and controls contractor shall supply the circuit breaker for installation in the designated electrical panel by the Division 26 contractor. Coordinate with the division 26 contractor for the appropriate make and model circuit breaker. Instrumentation and controls contractor shall provide the 120V power distribution wiring and raceways from the circuit breaker to the final locations of the Instrumentation and Controls products necessary for a complete and functional system.
 - The power shall be obtained from dedicated circuits in 120V panels. Instrumentation and controls contractor shall coordinate with electrical (division 26) contractor to provide accurate panel schedules at project closeout.
 - 4. All power wiring for the instrumentation and controls products shall be done with a dedicated earth ground by means of copper wire media only, originating at the power service source earth ground. This applies to all products.

3.4 FIELD QUALITY CONTROL

- A. Manufacturer's Field Service: Engage a factory-authorized service representative to inspect, test, and adjust field-assembled components and equipment installation, including connections, and to assist in field testing. Report results in writing.
- B. Perform the following field tests and inspections and prepare test reports:
 - 1. Operational Test: After electrical circuitry has been energized, start units to confirm proper unit operation. Remove and replace malfunctioning units and retest.
 - 2. Test and adjust controls and safeties.
 - 3. Test calibration of electronic controllers by disconnecting input sensors and stimulating operation with compatible signal generator.
 - 4. Test each point through its full operating range to verify that safety and operating control set points are as required.
 - 5. Test each control loop to verify stable mode of operation and compliance with sequence of operation. Adjust PID actions.
 - 6. Test each system for compliance with sequence of operation.
 - 7. Test software and hardware interlocks.
- C. DDC Verification:
 - 1. Verify that instruments are installed before calibration, testing, and loop or leak checks.
 - 2. Check instruments for proper location and accessibility.
 - 3. Check instrument installation for direction of flow, elevation, orientation, insertion depth, and other applicable considerations.
 - 4. Check instrument tubing for proper fittings, slope, material, and support.
 - 5. Check installation of air supply for each instrument.
 - 6. Check flow instruments. Inspect tag number and line and bore size, and verify that inlet side is identified and that meters are installed correctly.
 - 7. Check pressure instruments, piping slope, installation of valve manifold, and selfcontained pressure regulators.
 - 8. Check temperature instruments and material and length of sensing elements.
 - 9. Check control valves. Verify that they are in correct direction.
 - 10. Check air-operated dampers. Verify that pressure gages are provided and that proper blade alignment, either parallel or opposed, has been provided.
 - 11. Check DDC system as follows:
 - a. Verify that DDC controller power supply is from emergency power supply, if applicable.
 - b. Verify that wires at control panels are tagged with their service designation and approved tagging system.
 - c. Verify that spare I/O capacity has been provided.
 - d. Verify that DDC controllers are protected from power supply surges.
- D. Replace damaged or malfunctioning controls and equipment and repeat testing procedures.

3.5 ADJUSTING

- A. Calibrating and Adjusting:
 - 1. Calibrate instruments.
 - 2. Make three-point calibration test for both linearity and accuracy for each analog instrument.
 - 3. Calibrate equipment and procedures using manufacturer's written recommendations and instruction manuals. Use test equipment with accuracy at least double that of instrument being calibrated.
 - 4. Control System Inputs and Outputs:
 - a. Check analog inputs at 0, 50, and 100 percent of span.
 - b. Check analog outputs using milliampere meter at 0, 50, and 100 percent output.
 - c. Check digital inputs using jumper wire.
 - d. Check digital outputs using ohmmeter to test for contact making or breaking.
 - e. Check resistance temperature inputs at 0, 50, and 100 percent of span using a precision-resistant source.
 - 5. Flow:
 - a. Set differential pressure flow transmitters for 0 and 100 percent values with 3-point calibration accomplished at 50, 90, and 100 percent of span.
 - b. Manually operate flow switches to verify that they make or break contact.
 - 6. Pressure:
 - a. Calibrate pressure transmitters at 0, 50, and 100 percent of span.
 - b. Calibrate pressure switches to make or break contacts, with adjustable differential set at minimum.
 - 7. Temperature:
 - a. Calibrate resistance temperature transmitters at 0, 50, and 100 percent of span using a precision-resistance source.
 - b. Calibrate temperature switches to make or break contacts.
 - 8. Stroke and adjust control valves and dampers without positioners, following the manufacturer's recommended procedure, so that valve or damper is 100 percent open and closed.
 - 9. Stroke and adjust control valves and dampers with positioners, following manufacturer's recommended procedure, so that valve and damper is 0, 50, and 100 percent closed.
 - 10. Provide diagnostic and test instruments for calibration and adjustment of system.
 - 11. Provide written description of procedures and equipment for calibrating each type of instrument. Submit procedures review and approval before initiating startup procedures.
- B. Adjust initial temperature and humidity set points.

C. Occupancy Adjustments: When requested within 12 months of date of Substantial Completion, provide on-site assistance in adjusting system to suit actual occupied conditions. Provide up to three visits to Project during other than normal occupancy hours for this purpose.

3.6 DEMONSTRATION

- A. Engage a factory-authorized service representative to train Owner's maintenance personnel to adjust, operate, and maintain HVAC instrumentation and controls. Refer to Division 01, Demonstration and Training.
 - 1. Provide thirty two (32) hours of training divided into four (4) session of eight (8) hours each.

3.7 OEM CONTROLLER INTEGRATION

- A. This Section specifies the requirements for interfacing to the original equipment manufacturers (OEM) packaged control systems provide with all equipment specified in sections listed in Part 1
- B. The BCS Contractor shall be responsible for the development and application of all necessary programming code and the provision of all necessary hardware to allow the OEM packaged control system and the BCS to communicate with one another.
- C. The BCS Contractor shall, at his option, provide communication systems developed by the OEM, if available, for the purposes set forth here-in.
- D. Requirements for all Equipment:
 - 1. Provide for monitoring, alarming, start/stop and setpoint reset control for all equipment as applicable.
 - 2. Communications from equipment shall provide for real time process variable (temperature pressure, etc.) and status information.
 - 3. The intent is all information available at the OEM controller be communicated to the BCS
- E. Software Installation:
 - 1. The BCS Contractor shall provide all labor necessary to install, initialize, start-up and debug all system software as described in this Section. This includes any operating system software or other third party software necessary for successful operation of the system.

END OF SECTION

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University of North Carolina at Charlotte Science Building Project SCO # 16-14355-02D May 23, 2019 Addenda #3

This Addendum has been issued to hereby be made part of the contractual Bid Documents. Any and all information provided within this Addendum is to provide clarification, revise, and or supersede contract document information. Bidders are required to acknowledge this addendum on provided bid form or bidder could be subject to disqualification from contract.

For the purposes of this addenda and as noted below; the contractor shall read and interpret the following nomenclature herein:

"DELETE" is to delete the drawings sheets or specifications in their entirety from the document set and remove reference to them from the sheet index.

"REPLACE" is to remove the current drawing sheet or specification in its entirety from the document set and replace it with the corresponding updated sheet from the Architect's attachment called "Bid Addendum 03".

"ADD" is to include the current drawing or specification in its entirety to the document set with the corresponding sheet from the Architect's attachment called "Bid Addendum 03".

It is the responsibility of the bidding contractor to read, understand, and abide by these directions or present questions otherwise in a timely manner.

Following items are included with this addendum for use by bidding contractors:

- 1. Bid Addendum 3 issued by Clark Nexsen: 5/23/2019
 - a. AE Responses to Pre-bid RFI log.

- b. Revised Specifications
 - i. 107313 POINT SUPPORTED GLASS CANOPY
 - ii. 250000 INSTRUMENTATION AND CONTROL FOR HVAC
- 2. Revised Bid Packages Scopes of Work
 - a. BP-23A HVAC
 - b. BP-26A Electrical/Security
- 3. Science Building Pre-Bid RFI Log Questions and Responses dated 5/23/2019.
- 4. Revised Bid Schedule (Dated 5-21-19)

All documents that are included in this addendum can be found on the SmartBid website.

Please note the following important dates related to project bidding:

Final Date for Prequalified Bidders to submit RFI's:

(Balance of Packages) May 28, 2019 @ 12:00 PM EST

Architect to Issue Final Addenda:

(Balance of Packages) May 30, 2019 @ 5:00 PM EST

Bid Opening Dates:

(Balance of Packages) June 6, 2019 @ 2:00 PM EST

All questions regarding Addendum #3 shall be directed to John Schlobohm with Balfour Beatty Construction at 704.719.6362 or <u>JSchlobohm@balfourbeattyus.com</u>.

End of Addendum #3



UNC CHARLOTTE SCIENCE BUILDING PROJECT Phase 3 – Science Building PH. III: BP – 23A- HVAC SCO Project #16-14355-02D MAY 1, 2019

BID PACKAGES SCOPES OF WORK REVISION #1: 5/10/19 REVISION #2: 5/16/19 REVISION #3: 5/23/19 Bid Package Name: HVAC

Bid Package Number: Ph. III: BP-23A Intent:

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 courtesy and must be used in conjunction with <u>all</u> Project Documents. Scope of Work detail listed is not intended to describe a complete and final work scope. It is provided as a summary overview only.

Scope of Work Summary:

Furnishing of all labor, engineering, submittals and shop drawings, fabrication, material, equipment and tools, competent and certified supervision, hoisting, scaffolding, and transportation required for a complete installation of all **HVAC** items referenced in this scope of work and shown in the contract documents and specifications.

Specification Reference:

The organization of the specifications into divisions, sections and articles, and the arrangement of the drawings shall not control the CM@R in dividing the work among the Subcontractors or in establishing the extent of the Work to be performed by any Subcontractor.

Reference is made to the following Divisions of Work and Specification Sections which relate to the Scope of Work, but is in no way intended to limit or alter the intent of the Contract Documents or Work in anyway.

Primary Specification Sections:

- All Division 00 Procurement and Contracting Requirements
- All Division 01 General Requirements
- UNCC Design and Construction Manual: https://facilities.uncc.edu/files/media/designandconstructionmanualwhole.pdf
- State Construction Manual, State of North Carolina: https://files.nc.gov/ncdoa/documents/files/SCOConstructionManual2017_3.pdf
- 089119 Fixed Louvers
- 200000 Common Mechanical/Electrical Requirements
- All Division 23 HVAC (Complete)
- 250000 Instrumentation and Control for HVAC

Related Specification Sections:

- 078413 Penetration Firestopping
- 079200 Joint Sealants
- 033000 Cast-In-Place Concrete

UNC CHARLOTTE SCIENCE BUILDING PROJECT HVAC SCO Project #16-14355-02D Initial_____



UNC CHARLOTTE SCIENCE BUILDING PROJECT Phase 3 – Science Building PH. III: BP – 23A- HVAC SCO Project #16-14355-02D MAY 1, 2019

> BID PACKAGES SCOPES OF WORK REVISION #1: 5/10/19 REVISION #2: 5/16/19 REVISION #3: 5/23/19

- 083110 Access Doors and Frames
- 123553 Laboratory Casework
- Division 05 (As Applicable)
- Division 07 (As Applicable)
- Division 09 (As Applicable)
- Division 11 (As Applicable)
- Division 22 (As Applicable)
- Division 26 (As Applicable)
- Division 27 (As Applicable)
- Division 28 (As Applicable)
- Division 31 (As Applicable)
- Division 33 (As Applicable)

This Bid Package is for Work in accordance with all Contract Documents as listed in Exhibit A of this Subcontract and all work to be performed. The work of this Bid Package includes, but is not specifically limited to:

General Scope of Work Items:

The following is an outline of general performance items that are expected of this subcontractor during execution of this work and are specifically included, but are not limited to, under this agreement:

Closeout, Attic Stock, Owner Training, Warranties, etc.

- 1) All Owner Training requirements shall be completed <u>90 days prior</u> to schedule project completion date or earlier if noted elsewhere in the Contract Documents.
- 2) All warranties start at the Project Completion Date or date approved by Owner/SCO, NOT at start-up. Subcontractor is responsible for all warranty costs.
- 3) This subcontractor will not be allowed to bill for stored or installed equipment on-site if the Operation and Maintenance Manuals for said equipment are not submitted and approved.
- 4) Provide all 'Extra Materials', attic stock, spare parts, 'Maintenance Tools', etc. for Owner to Construction Manager in unopened and clearly labeled containers/packages. All items shall be turned over no later than <u>90 days prior</u> to the Project Completion date. All items shall be transmitted to Construction Manager, and delivered and distributed to a location on campus as determined by Owner.

Schedule / Submittals/ Material Expediting / Work Schedule

- 1) All costs for expediting materials to the site to avoid schedule delays are herein included.
- 2) Submittals for any equipment/materials that need to be lifted into the penthouse shall be expedited to ensure material is on-site and in the penthouse prior to the roof framing being installed. Any costs associated with expediting fabrication as required are included. The installation of the roof/framing will not be delayed due

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UNC CHARLOTTE SCIENCE BUILDING PROJECT Phase 3 – Science Building PH. III: BP – 23A- HVAC SCO Project #16-14355-02D MAY 1, 2019

> BID PACKAGES SCOPES OF WORK REVISION #1: 5/10/19 REVISION #2: 5/16/19 REVISION #3: 5/23/19

to delays in submittals and fabrication of material. If the materials/equipment are not on-site prior to the roof being installed, it will be the responsibility of this subcontractor to fabricate equipment in a manner that it can be loaded into the penthouse with the roof on.

- a) Protection of all equipment once loaded into the penthouse is included.
- 3) This Subcontractor acknowledges that the Project will have a phased turnover in accordance with the Project Schedule as necessary, to comply with Contract Documents. There are no limits to the number of mobilizations required to achieve a complete Project. At the completion retest and rebalance to confirm intent of Contract Documents is met. This subcontractor to provide supervision for coordination with the Commissioning Agent and Test & Balance subcontractor. This applies to all systems installed by this subcontractor.
- 4) Subcontractor has reviewed the Drawings & Specification for this Project. Subcontractor has found no obvious omissions and further agrees that the Work of this Agreement and the Project can be constructed within the milestone and completion dates without claims for delay or impact costs, unless substantial Owner directed Scope changes occur.
- 5) Subcontractor will evaluate access to the mechanical, electrical rooms, penthouse areas, etc. for installation of any equipment. If it is necessary to set equipment prior to certain structural elements being installed due to lack of access, this subcontractor will expedite the delivery of such equipment in accordance with the project schedule and will set equipment with no additional costs incurred by the Construction Manager or Owner.
- 6) Subcontractor is responsible to expedite all vertical work as necessary and in compliance with the Project Schedule. Vertical work shall proceed from starting point to completion point non-stop as dictated by the flow of work and the Project Schedule. All vertical work shall be completed and tested prior to progressing. Failure to provide priority to this work will make this Subcontractor responsible for all costs to re-mobilize trades to in-fill openings, provide temporary enclosures, etc. as deemed by Construction Manager.
- 7) This subcontract will staff the project from commencement to completion with a crew and project site lead knowledgeable of the scope of work for which this Subcontractor will be performing. The size of this crew may vary throughout the duration of the project. However, at no time throughout the duration of the project will this Subcontractor understaff this project so as to not be able to meet the Project Schedule. The CM@R reserves the right at any time throughout the duration of this Subcontractor's installation to direct this Subcontractor to increase the crew size to maintain and meet the Project Schedule. This Subcontractor shall adhere to this direction within 24 hours of the CM@R's request without fail.
- 8) This Subcontractor agrees to actively participate in scheduled pull planning, coordination, and scheduling meetings as part of the Pre-Construction and Pre-Installation process. A senior, knowledgeable, decision making representative will be designated by this Subcontractor's organization to be engaged and actively participate on the behalf of this Subcontractor for these meetings. The subcontractor acknowledges and agrees that the decisions made by this Subcontractor's designated representative is binding and will be adhered to by this Subcontractor unless expressly approved otherwise by the CM@R for the duration of the project.

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Mockup

- 1) Subcontractor shall expedite all mock up material as outlined in the contract documents for delivery within thirty (30) days of notice of award in order to construct all mock-up conditions as outlined in the contract documents to illustrate rough-in requirements, finishes, etc. of specified materials furnished under this agreement. All required mock-up conditions shall be complete within ninety (90) days of notice of award.
- 2) Subcontractor to provide any and all materials necessary to complete mockups for each type of penetration through a rated wall / assembly. This includes duct material, piping material, sleeves, and fire/smoke sealing materials, as well as the installation of each.

General

- 1) All reference to 'by Contractor' and 'by General Contractor' and 'by Construction Manager' on the Mechanical Drawings and specifications shall be assumed as 'By this Subcontractor'.
- 2) Subcontractor is the firm who will be providing a bid for this package, hereinafter referred to as the subcontractor.
- 3) Construction Manager at Risk is Balfour Beatty Construction, hereinafter referred to as CM@R.
- 4) This scope of work includes BIM / ILM coordination and execution for the UNC Charlotte Science Building Project. Subcontractor is responsible for full adherence to the approved BIM / ILM execution plan as outlined in the Bid Manual.
- 5) The subcontractor is responsible for all delegated design items and as-built documentation as outlined in the contract documents.
- 6) Subcontractor agrees to provide a complete system that complies with all applicable codes and the Contract Documents.
- 7) Multiple mobilizations as required to complete Scope of Work is included.
- 8) All scaffolding, man lifts, cranes, hoists, forklifts, etc. to install and distribute this scope of work is included. Hoisting of all materials, equipment, and trash removal at elevated conditions is included by this Subcontractor.
 - a) Subcontractor shall be responsible for any repair to the crane/lift road caused by any equipment under this scope.
 - b) Any ground/pad prep and installation required for cranes being utilized for the completion of this scope of work are included in this scope.
 - c) Subcontractor is to include in their scope and outrigger that will be installed off the side of the building and utilized to load material for this scope of work. Relocating the outrigger from floor to floor as the work progresses up the building is included.
 - d) Any lifts or scaffolds used in areas with finished floors shall have Masonite under them to prevent damage to the finished floors.
 - e) Any and all lifts inside the building must be diapered at all times to prevent damage to floors in the event of a hydraulic leak, in the event of a hydraulic leak it is to the discretion of the CM@R to direct

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blame to the responsible party. Any damages associated with leaks shall be the sole responsibility of the subcontractor to correct.

- 9) Daily cleanup and disposal of all waste associated with the subcontractor's scope of work to an on-site dumpster provided by CM@R is included. If this requirement is not met by the subcontractor daily, the construction manager reserves the right bring in labor to clean the jobsite at the expense of the subcontractor.
- 10) The building permit will be provided by the Owner. However, this Subcontractor shall be responsible for any additional permits, bonds, or fees as required to complete this Scope of Work.
- 11) This Subcontractor is responsible for the repairs and replacement of sidewalks, curb/gutter, asphalt paving damaged as a result of this work.
- 12) Vehicle and Pedestrian Traffic control is included by this Subcontractor for all activities on site for this Subcontractor. The CM@R will provide Vehicle and Pedestrian Traffic specifically at the site entrances and adjacent pedestrian pathways only.
- 13) Subcontractor is responsible for ensuring no mud is tracked from the site onto campus roads, walkways, and inside buildings. Washing of truck and equipment tires prior to leaving the site is included by this Subcontractor utilizing truck and tire wash stations which will be provided by the CM@R. Any dirt/mud tracked on campus roads, walkways, or inside building by this subcontractor shall be immediately cleaned by this subcontractor at no additional cost.
- 14) Subcontractor shall assume a completed structure for installation of equipment and piping. No provisions will be allowed for "leave-outs" unless specifically noted in the contract documents. All costs associated with breaking down equipment to access rooms is herein included.
- 15) The Subcontractor will be responsible to adequately protect all roofing membrane, coping, and roofing curbs during execution of all associated scopes of work as part of this agreement. It will be the responsibility of this Subcontractor to immediately report any damage to the Construction Manager and provide adequate temporary protection of any damage to the roofing membrane so as to prevent any water intrusion into the building. Damage as a result of water intrusion inside the building is the responsibility of this Subcontractor. Once temporary protection is secured, this Subcontractor will coordinate with a National Roofing Contractors Association certified roofing contractor to repair the damage according to the applicable standards.
- 16) Subcontractor shall provide protection of existing utilities (pipes, valves, hangers, etc.) during installation. Damages to existing utilities shall be repaired or replaced by this Subcontractor if damaged while performing work under this agreement. Any known damage to existing utilities (i.e. gas line, steam, etc.) shall be brought to the immediate attention of the Construction Manager or emergency services so adequate notice can be given or evacuation may take place.
- 17) Subcontractor shall submit to Construction Manager all welders' certificates and crane inspection certifications ten (10) days prior to starting work. All certifications and inspections shall be current in accordance with OSHA and the Contract Documents.

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- 18) Structure elevations and lengths of piping indicated on the document are for information purposes only. All information shall be field verified for lengths; finish grade elevations shall be coordinate with final grading drawings, etc.
- 19) Subcontractor shall layout all work under this agreement from Construction Manager provided horizontal (one north-south and one east-west) and vertical control (one benchmark) points.
- 20) Final cleaning of installations completed under this agreement is included in this Scope of Work.
- 21) Subcontractor shall insure all installations completed under this agreement have sufficient specified and/or code required separations and clearances.
- 22) Subcontractor shall verify locations of all systems installed as part of the Early Package II. All costs associated with fittings, flanges, tie-ins, etc. to complete systems is included.
- 23) Subcontractor shall utilize gas or diesel operated welding machines. Welding will not be done using on-site temporary electrical power. Subcontractor will provide weld shields to protect surrounding finishes and visual harm to others.
- 24) This Subcontractor shall complete all reports as well as be responsible for communicating, maintain, and submitting field quality control test reports for all scopes of work as applicable. This documentation will be submitted via the contract document submittal process and shall be approved by and owners representative.
- 25) Subcontractor's site supervision shall be required to attend a daily 8a.m. coordination meeting. If you have multiple supervisors for multiple floors, they each need to be in attendance.
- 26) Subcontractor is responsible for notifying Construction Manager, Owner, Architect, and governing agencies of all tie-ins and shut downs of existing utility systems no less than 30 days prior to shut-down and tie-ins. All shut-down and tie-ins will commence only with the expressed written approval of the Construction Manager, Owner, Architect, and Governing Agencies. Subcontractor is responsible to coordinate with the Electrical Subcontractor to ensure power is maintained at all buildings at all times during construction. Any loss of power as a result of a lack of coordination by this subcontractor will be the responsibility of this subcontractor to remedy in full.
- 27) Subcontractor understands all exterior and interior building finishes are to be protected by this Subcontractor to perform work under this agreement. Subcontractor is responsible to protect surrounding substrates and finishes from work of this Scope.
 - a. Subcontractor understands that all existing finish work is to be protected by this Subcontractor and this Subcontractor shall be responsible for costs to make any repairs or a portion thereof of unidentifiable damage caused jointly with other MEP trades.
- 28) All rough-in work included in this Scope of Work is to be constructed in accordance with contract documents and approved coordination document unless approved otherwise by Owner and Architect.
- 29) Subcontractor shall assume all materials under this agreement will be prefabricated off-site due to limitations of on-site storage unless approved otherwise by the Construction Manager, Owner, Architect / Engineer. Subcontractor shall assume no on-site storage of materials is allowed. Establishing a fabrication shop onsite will only be allowed with the expressed approval of the Construction Manager, Owner, Architect / Engineer.

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- 30) Subcontractor shall coordinate and work with Test and Balance contractor ensure system can be correctly balanced. Subcontractor agrees to make any corrections to installations under this agreement required by Test and Balance contractor within 5 calendar days.
- 31) Subcontractor will be responsible for all asphalt and concrete patching as a result of the completion of this Subcontractors scope of work.
- 32) Subcontractor is responsible for identifying all potential conflicts with building structure systems/elements. Subcontractor shall include all required piping/duct modifications, fittings, etc. to comply with final system layouts with approved coordination drawings
- 33) The Subcontractor will be responsible to comply with a coordination schedule shall be as determined by the Construction Manager; this schedule will be based up the milestones outlined in the Project Schedule.
 - a. Each Subcontractor is responsible for total coordination of all underground utilities and for providing complete utilities system. There will be no cost or time considerations given for adjustments of structures or pipe runs due to conflicts arising from lack of coordination with adjacent utilities, structures, or other Subcontractors. First installed does not constitute grounds for a change order for installation of any uncoordinated work.
 - b. Each Subcontractor designated to contribute information pertinent to the development of the coordination drawings shall attend and participate in the scheduled coordination meetings as directed by the CM.
 - c. An initial coordination meeting will be held prior to the production of any coordination drawings. Electronic copies of selected CAD (computer aided design) drawing files with architectural backgrounds will be given to the subcontractors at this meeting for preparation of layout drawings within 30 days of project award. Each subcontractor will be responsible for any cost to convert electronic CAD files furnished by the CM. After each subcontractor has fulfilled its obligations it shall return the drawings and electronic files to the mechanical subcontractor for generation of clash detection reports and/or submittal to the Design Team for final approval.
 - i. If any subcontractor fails to produce all of its initial coordination drawings within the time allocated, the CM will produce said drawings, and all the costs of producing said drawings will be at the expense of the Subcontractor.
 - ii. In order to complete the MEP coordination efforts per the Project Schedule, this Subcontractor will be responsible for completing coordination efforts for all scopes of work simultaneously utilizing the information provided by all coordinating parties.
 - d. Each trade/subcontractor shall make each respective team available for one meeting per week (of a minimum 8 hours) for duration of notice of award until all buildings have completed coordination drawings.
 - e. The intent is each coordination team as defined above shall be available for one (1) meeting per week.
 - f. Coordination efforts are not to take place strictly on the day of the in-person meeting. Coordination efforts shall be ongoing at all times during the week. The intent of the in-person meetings is to



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evaluate any major conflicts or areas of concern and to collaborate on the drawings generated over the past week.

Testing & Inspections

- 1) Pressurized testing of systems installed by this Subcontractor may only be done utilizing water. No air pressure testing allowed for this project.
- 2) All testing, certification tests, etc. under direction of Owner, Engineer, Inspectors, Contract Documents, and governmental authority(s) having jurisdiction are herein included.
- 3) Subcontractor is responsible for notifying Construction Manager, Owner, Architect, and governing agencies of all inspection requests.
- 4) Provide testing, cleaning, certification, and start-up in whole or in part to meet project schedule on a per building basis.
- 5) It is understood and agreed that any Work under this Scope found to be in non-compliance by the Authorities Having Jurisdiction, the Owner, the Design Team, and/or the Construction Manager shall be corrected and re-tested at no cost to Construction Manager and/or Owner. Any costs to expedite the re-test of scopes of work shall be the sole responsibility to meet the Project Schedule.
- 6) It is the responsibility of this Subcontractor to anticipate inspection delays in the installation durations and sequence such work ahead of others as not to impose delays in the schedule. This shall be construed for DOI, Engineer, UNCC maintenance and facilities, Fire Marshal, State Construction Office, etc.
- 7) Subcontractor will be responsible for providing a comprehensive schedule for all testing and commissioning required in coordination with the Owner's Testing agent for review no less than 90 days prior to the commencement of testing activities. Adjustment to testing activity start and completion dates to coordinate with the availability of the Owner's Testing agent will be the responsibility at no cost to the Owner or the Construction Manager.
- 8) Subcontractor shall coordinate and perform Owner Training of all equipment start-up and check-out as described in the Documents.
- Competent supervision shall be provided by the Subcontractor anytime a testing meeting is taking place. Also, competent supervision shall be provided during all functional performance testing and jobsite inspections.
- 10) The superintendent or the subcontractor's in-house testing agent shall be on-site in a full-time capacity during the testing of their respective systems. This includes at the turnover of each facility/phase and once more during final testing of entire project.
- 11) This subcontractor is responsible for any costs associated with retesting as required to provide a complete and operable, fully tested facility. There are no limits to the number of retests included; retesting shall be performed until equipment under this agreement has been fully tested and meets the design intent for the project.

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- 12) This Subcontractor shall be responsible to create, maintain, and submit field quality control test reports for all scopes of work as applicable. This documentation will be submitted via the contract document submittal process.
- 13) Subcontractor shall be responsible for providing safe access for testing agency and Engineer of Record to the Work being fabricated, stored, or installed so that required inspection and testing may be accomplished. It is understood and agreed that any Work under this Scope found to be in non-compliance shall be corrected and re-tested at no cost to Construction Manager and/or Owner.
- 14) All pipe and welding testing requirements are included herein.

Commissioning

- 1) Subcontractor will cooperate with Owner's commissioning agent and comply with all requirements.
- 2) Subcontractor will be responsible to provide a comprehensive schedule for all testing required in coordination with the Owner's Commissioning agent for review no less than 90 days prior to the commencement of testing and commissioning activities. Adjustment to testing activity start and completion dates to coordinate with the availability of the Owner's Commissioning agent will be the responsibility at no cost to the Owner or the Construction Manager.
- 3) Coordinate all testing, inspections, and punch-list with commissioning agent hired by the Owner for this Project at no additional cost to Construction Manager.
- 4) Subcontractor shall coordinate and perform Commissioning and Owner Training of all equipment start-up and check-out as described in the Documents.
- 5) Competent supervision shall be provided by the Subcontractor anytime a commissioning meeting is taking place. Also, competent supervision shall be provided during all functional performance testing and jobsite inspections.
- 6) The subcontractor shall have an in house Commissioning Manager. This individual shall be onsite full-time once commissioning of their respective systems has started until the time that all systems are fully commissioned and turned over to ownership. This includes at the turnover of each facility/phase and once more during final commissioning of entire project.

Hangers, Supports, Penetrations, & Block-outs

- 1) Subcontractor shall furnish and install all required supports for this Work including, but not limited to anchor bolts, hangers, isolators, channels, angles, embeds, etc. All items shall be hot dipped galvanized finish, unless noted otherwise in the Contract Documents.
- 2) All material and equipment shall be installed in a manner which will not overload the structural elements of the building. Should additional supports be required to distribute loads over more than one structural element, same shall be included by this Subcontractor. All items hanging from steel trusses shall be hung off of truss panel points.
- 3) The use of powder actuated fasteners is not permitted on this project.

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Related Work / Divisions

1) Specification Section 033000: Concrete

- a) Subcontractor shall coordinate locations of all required equipment pads. Subcontractor will be responsible for laying out pads to be poured by the concrete subcontractor. Layout drawings are to be provided at time of initial project submittals prior to rebar shop drawings being approved.
- b) Any grouting for piping, fixtures, or equipment is included.

2) Specification Sections 078413: Penetration Firestopping

- a) Subcontractor shall seal, pack, fire safe, etc. all smoke and fire rated penetrations in walls, floors, and ceilings as required by the Contract Documents and as to maintain required ratings.
- b) This subcontractor is responsible during the submittal and execution of this scope of work to ensure that the penetration firestopping scope for which they are responsible for has continuity throughout the project.
- c) Provide a crew experienced in installing penetration firestopping similar in material, design, and extent to that indicated for this Project, whose work has resulted in construction with a record of successful performance. Manufacturer's willingness to sell its penetration firestopping products to Contractor or to Installer engaged by Contractor does not in itself confer qualification on buyer.
- d) Ensure that no fireproofing material is installed for penetration firestopping when ambient or substrate temperatures are outside limits permitted by penetration firestopping manufacturers or when substrates are wet because of rain, frost, condensation, or other causes. Any cost to remediate will be the responsibility of the Subcontractor.
- e) Subcontractor is responsible to notify Owner's testing agency at least seven days in advance of penetration firestopping installations; confirm dates and times on day preceding each series of installations.
- f) Subcontractor has full responsibility to coordinate construction of openings and penetrating items to ensure that penetration firestopping is installed according to specified requirements. Coordinate sizing of sleeves, openings, core-drilled holes, or cut openings to accommodate penetration firestopping.
- g) Subcontractor is responsible to examine substrates and conditions, with Installer present, for compliance with requirements for opening configurations, penetrating items, substrates, and other conditions affecting performance of the Work.
- h) Subcontractor will be responsible to provide for each location where a fire-resistance-rated floor or wall assembly is penetrated, provide a UL-listed through-penetration firestop system selected from the applicable UL number range listed in the schedule below that complies with the requirements of this Section and is suitable for the penetration conditions indicated for the Project.

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3) Specification Section 079200: Joint Sealant

- a) Subcontractor is responsible to water seal, weather caulk, aesthetic caulk, etc. all sleeves/penetrations and fixture perimeters as required by the Contract Documents and approved coordination documents. The Subcontractor will submit samples for applicable products as outlined in the contract documents and this specification section as well as a first look that must be approved by and owner representative.
- b) The Subcontractor shall provide an annotated drawing and joint sealant schedule of locations where joint sealants are to be coordinated and installed with applicable scopes of work.
- c) The Subcontractor will submit samples for applicable products as outlined in the contract documents and this specification section.
- d) Coordinate the installation of joint sealants with acceptable project conditions as outlined in the specification section and the contract documents.

4) Specification Section 099123: Painting

- a) Subcontractor shall adequately prepare all substrates to be painted. This shall include coordination with the painting trade to ensure proper adherence between various products.
- b) Surfaces of equipment and materials are to be thoroughly cleansed and left ready for painting in accordance with Architectural Painting Specifications. All damage to paint primers or applied factory finishes which has occurred during installation shall be repaired by this Subcontractor. All dents or surface damages shall also be repaired.

5) Specification Section 083110: Access Doors

- a) All access panels/doors and covers as required by code, or indicated in the Contract Documents, that's purpose is to provide access to installations under this agreement, are by this Subcontractor. The indicated access doors are to provide access to equipment, valves, etc. These access doors are for access through architectural ceilings and walls. Rated panels are included to match ceiling and wall types.
- b) Subcontractor is responsible for coordinating the locations and size of required framed openings with respective trades during the construction of walls, ceilings, and floors.
- c) All access doors are to be laid-out on the floor by this subcontractor with sizes and locations of framed opening. Access doors are to be turned over to the Drywall contractor for installation prior to commencing with ceiling and/or wall framing activities. If layout sizes or locations are not correct, or if they are not laid out prior to beginning ceiling framing operations, this contractor shall be responsible for the cost of any rework incurred by Drywall/Framing contractor.
- d) Quantity of access doors shall be minimized and considered as part of the MEPF coordination process.
- e) Subcontractor is responsible for coordinating with all other trades providing access doors to ensure that all access doors are keyed alike.

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- 6) **Sleeves, Penetrations, Curbs, & Sealing** The following is a general outline of items included, but not limited to, under this agreement for Sleeves, Penetrations, Curbs, and Sealing.
 - a) Subcontractor shall layout, install, and strip all required sleeves and protect from elements.
 - b) Formed openings in masonry and concrete walls are herein included.
 - c) Concrete/CMU saw cuts, concrete/CMU coring & drilling removal, and concrete replacement as required to install Work within this Scope is included in this Scope of Work. No saw cutting or core drilling is to be performed without written approval from Construction Manager and Architect/Engineer. All penetrations and hangers shall be coordinated withal MEP subcontractors and CM.
 - d) All required pre-fabricated roof curbs and mechanical roof supports are herein included. Furnishing and installation of curbs and supports by this Subcontractor shall be in strict accordance with roofing installation procedures. Include any required counter flashing, and preservative treated wood nailers are included in this Scope.
 - e) Subcontractor shall layout, cut, and protect any and all penetrations through metal decking as required to complete this scope of work. (Add. #2)
- 7) **Temporary Utilities** The following is a general outline of items included, but not limited to, under this agreement for Temporary Utilities.
 - a) Furnish, install, maintain, and remove the following temporary utilities:
 - i) Subcontractor is responsible for providing and maintaining temporary heating to maintain 60 degree Fahrenheit at all times or manufacturers recommendations for associated installations under this agreement which could be damaged due to cold temperatures on each floor level through activation of permanent HVAC system.
 - (1) This includes temporary heating for installation of duct systems and duct seal as required by specifications.
 - ii) Provide and maintain temporary conditioned air (heat and air conditioning) through the permanent mechanical systems in accordance with project schedule (duration for start-up milestone through Owner acceptance of system). All filters and filter media are included and shall be maintained as necessary. Subcontractor is to maintain a filter change schedule to document all filter changes for the duration of the project from the time the building systems are turned on until the time the building is turned over.
 - (1) Subcontractor shall put together and submit a temporary conditioned air plan as outlined the contract documents and submit for approval prior to utilization of the building mechanical systems for temporary heating or cooling. Duct cleanliness testing prior to and after temporary use of Mechanical system is included.
 - (2) During temporary operation install and maintain filter fabric over all duct and equipment openings. If mechanical system becomes soiled for any reason, subcontractor shall clean final mechanical systems and ductwork to meet Owner's approval at Project Completion; it shall not be excusable for any dust and/or dirt to enter the system. The ductwork shall be sealed when it

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arrives on site, once installed all open ends shall be sealed, and once the system is operational filter media shall be installed over all diffusers, grilles, and openings. All return and exhaust ductwork shall be blocked-off with a rigid, non-permeable material.

- iii) Subcontractor agrees to expedite the permanent mechanical systems and final hook-ups necessary to operate the permanent heating and ventilating system for the purpose of temporary heating and ventilation. The Subcontractor will include any labor required to operate the mechanical portions of this system.
- iv) Subcontractor is responsible for temporary strainers in all pumps. Subcontractor shall monitor and clean strainers to insure no damage occurs to permanent system.
- v)The early start-up of the mechanical equipment shall in no way encroach upon any warranty requirements of the Specifications. Subcontractor shall advise and coordinate with Contractor all items that are or will be received in order to achieve early start-up of equipment.

8) Ductwork Cleanliness

- a) All ductwork shall be delivered to the project site with ends capped/wrapped so as to prevent entrance of contamination (dirt, water, debris, etc.) End protection shall only be removed at time of installation, and all open duct ends shall be re-protected immediately upon completion of installation.
- b) Provide and maintain temporary covered ends on all exposed ductwork.
- c) Subcontractor shall protect all ductwork interiors at all times from delivery, unloading, storage, rough-in, startup, etc. until Owner accepts building.
- d) All ductwork is to be on-time delivery, within 5-days of installation. No storage of duct will be permitted onsite.
- e) Final cleaning of any contaminated ductwork per the specifications as well as duct cleanliness testing is included.

Trade Specific Scope of Work Items:

The following is a general outline of items specifically included, but not limited to, under this agreement:

- 1) This scope of work if for the UNC Charlotte Science Building Project.
- 2) Subcontractor shall allow walls to be primed and finish painted prior to installation of surface mounted piping, grilles, registers, diffusers, etc. and setting of equipment.
- 3) Subcontractor is responsible for cutting all acoustical ceiling tiles for mechanical system installations.
- 4) Includes all labeling for HVAC scope as outlined in the specifications.

The following items are a general scope listing for work to be included in this agreement for **Heating Ventilation** and **Air Conditioning:**

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- 1) Subcontractor shall provide and install all HVAC systems complete as detailed in the contract documents and specifications.
- 2) All ductwork, grilles, volume dampers, fire dampers, smoke dampers, combination dampers, registers, fans, exhaust fans, etc.
- 3) The plenum walls at the penthouse level which are installed on-top of the concrete curbs by others are included in this scope.
- 4) Testing of any and all fire, fire/smoke, & smoke dampers is herein included. Subcontractor to provide a written report to Construction Manager indicating all dampers have been tested, which ones failed, and the date of completion of corrections to any damper.
- 5) Building ventilation systems including but not limited to, air handlers, fans, fan coil units, ventilators, VAV's, dampers, ductwork, insulation, air distribution devices, unit heaters, etc.
- 6) Chilled water systems including, but not limited to, expansion tanks, piping, jackets, end seals, valves, fittings, meters, connections, valve boxes, flanges, expansion loops, supports, anchorages, piping insulation, frequency drives, etc.
 - a) Tying into existing CW underground lines installed as part of EP-2 is included. Lines installed as part of EP-2 will be brought into the basement and turned up 1-foot AFF. (Add. #1)
- 7) Heating hot water systems including, but not limited to, expansion tanks, piping, jackets, end seals, valves, fittings, meters, connections, valve boxes, flanges, expansion loops, supports, anchorages, piping insulation, frequency drives, etc.
 - a) Tying into existing HW underground lines installed as part of EP-2 is included. Lines installed as part of EP-2 will be brought into the basement and turned up 1-foot AFF. (Add. #1)
- 8) Subcontractor shall provide all rough-in and final hook-up of all items requiring Mechanical service that are specified in any other section of the Specifications, or Owner furnished, and/or indicated in the Contract Documents. All equipment and materials provided under other Specification sections which are to be installed by this Subcontractor will be identified and delivered to this Subcontractor's Project office.
- 9) Costs for expediting shop drawings, piping and structures to the site is herein included to avoid delays. Verifying invert of existing manholes prior to starting of work confirming inverts provided on documents.
- 10) Structure elevations and lengths of piping indicated on the document are for information purposes only. All information shall be field verified for lengths; finish grade elevations shall be coordinate with final grading drawings, etc. Subcontractor is responsible for final setting and adjusting of all manhole lids, etc.
- 11) It is responsibility of this Subcontractor to ensure all piping installations have sufficient specified or code required coverages since installations will occur prior to final grading operations. Subcontractor shall be responsible for benching back existing soils at completed structures if adjacent soils are higher than proposed and/or applying controlled backfill materials around structures/piping if soils are lower than proposed to protect all installation from construction traffic, damages, differential settlements, etc.
- 12) Subcontractor is responsible to furnish and install all louvers per the Contract Documents. This includes both mechanical and architectural louvers.

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- a) Any misc. supports required for the installation of the louvers which are required but not shown in the contract documents are included.
- b) Subcontractor to coordinate with the steel contractor for structural back-up requirements.
- c) Any and all pre-finished break metal and flashing as shown is included.
- 13) Insulation of all items installed under this scope of work is included.
- 14) Subcontractor is responsible for providing all required duct & pipe identification, valve tagging, pipe color coding, identifying flow direction, etc.
 - a) This includes any and all color-coded PVC jackets as called for in the specifications.
 - b) Subcontractor shall include a repair allowance for insulation totaling 5% of the total insulation installed on the project. Any un-used will be credited back via a deductive change order upon subcontract final reconciliation.
- 15) All pressure testing, purging, disinfection, certification tests, etc. under direction of Owner, Engineer, Inspectors, and governmental authority(s) having jurisdiction. Subcontractor shall dilute and properly dispose of heavily chlorinated water, testing water, purging water, contaminated water, etc. with Owner permission. Piping system supplier shall be on-site to direct installation and testing of systems under this agreement.
- 16) All tie-ins, terminations, etc. into existing systems are included herein. This shall include any and all mechanical piping systems installed as part of the Early Package 2.
- 17) All pipe bedding and backfill material as required by the Contract Documents, Local, City, County, State, and Federal Codes/Regulations is included.
- 18) Subcontractor shall flush and clean all building mechanical piping systems. Provide and maintain construction strainers in all pumps until Owner acceptance of buildings.
 - a) Chemically clean, test, certify, etc. under direction of Owner, Engineer, Inspectors, Contract Documents, and governmental authority(s) having jurisdiction.
 - b) Subcontractor shall dilute and properly dispose of chemical water with Owner permission. Provide all temporary piping, pumps, by-passes, and valving to chemically clean and circulate water and flush.
- 19) This subcontractor is responsible for all costs to chemically balance the HVAC water systems to meet Owner requirements. This shall apply to all pipe installed under this agreement.
- 20) The chemical feed systems as indicated in the Contract Documents are herein included.
- 21) This subcontractor is responsible for all condensate piping from all equipment provided under this agreement to the nearest accessible vertical condensate riser provided by the plumber or floor drain as indicated in the Contract Documents. Insulation shall be included, as required per code and per the Contract Documents.
- 22) Included herein is all refrigerant piping required for mechanical equipment and as indicated in Contract Documents
- 23) Subcontractor is responsible to coordinate work under this agreement with Fire Protection Subcontractor, Plumbing Subcontractor, Electrical Subcontractor, Owner's Vendors, etc. to ensure all MEP & Life Safety scopes are fully coordinated and/or to comply with field conditions for connections to existing utilities at no additional cost to CM@R.

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- 24) Final gas connections from piping installed by plumbers to mechanical equipment is included.
- 25) Any and all supports required to in order to attach mechanical equipment, ductwork, piping, etc. back to the building or structure is included in this scope.
 - a) Subcontractor to coordinate with steel contractor for locations where equipment is attached to roof joist to ensure proper reinforcements are installed prior to attaching equipment.
 - b) Subcontractor to coordinate with the steel contractor for structural back-up requirements.
- 26) Subcontractor shall receive inventory, store, schedule, handle, protect, and install any Owner furnished mechanical equipment as indicated in the Contract Documents.
- 27) Subcontractor to provide rough-in and final connection of all HVAC related systems which are part of all laboratory fume hoods.
 - a) All ductwork and devices internal to the fume hoods will be installed and roughed-in by the fume hood supplier and stubbed out of the hood to be tied in by this contractor.
 - b) Final tie-in of duct to fume hoods is included in this scope.
 - c) Subcontractor is responsible for coordination of all rough-in requirements with the fume hood supplier.
- 28) Subcontractor is responsible for coordination, rough-in, and final tie in of all laboratory equipment as called for in the equipment schedule in the contract documents.
 - a) This includes both contractor and owner furnished items.
 - b) Coordination of all rough-in requirements for these items is included with other trades.
- 29) Subcontractor shall provide and install all heat trace required for this scope of work. Coordination of the electrical requirements with the electrical contractor is included.
- 30) Subcontractor is responsible to review the contract documents during and advise on all opportunities to prefabricate piping runs and connections offsite. If opportunities are present for pre-fabrication, the Subcontractor will still be responsible for all coordination efforts and to track this material on the material delivery log.
- 31) Subcontractor agrees to cover piping and equipment insulation with 6 mils. poly to protect insulation from water and dirt damages until such time of when final paint to pipe insulation will be applied.
- 32) All seismic requirements for systems installed under this scope of work are included.

The following items are a general scope listing for work to be included in this agreement for HVAC Controls:

1) Subcontractor is responsible for providing and installing all components in order to provide a complete building controls system as detailed in the contract documents and specifications. This includes but is not limited to, conduit, raceway, boxes, rough-in, wiring, installation of devices and equipment, programming, testing, balancing, and commissioning. -(Add. #3)

2) Subcontractor is responsible for coordinating all electrical requirements with the electrical contractor. Subcontractor is responsible for coordinating the location and routing from point to point of all required raceway for this system, which is to be installed by the electrical contractor. Subcontractor is responsible for providing and installing all raceway/conduit and boxes for all HVAC controls items in the building. All low voltage



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warning and devices are included in this scope of work. Any and all control power transformers for this scope of work are included. -(Add. #3)

3) Subcontractor is responsible for coordinating with the fire alarm contractor for the tie-in of all mechanical equipment with the fire alarm system.

a). Subcontractor shall install all duct detectors provided by the fire alarm contractor. Final wiring of duct detectors will be by the fire alarm contractor.

The following items are a general scope listing for work to be included in this agreement for **Electrical (As Applicable)**

Subcontractor is responsible for Line-Load wiring requirements as detailed below and in the contract documents and specifications.

- 1) Subcontractor is responsible for reviewing Electrical documents for specified power requirements and conditions for mechanical equipment including responsibility for furnishing and mounting disconnects, furnishing and mounting motor starters, furnishing and mounting variable frequency drives, etc. This Subcontractor is responsible for completing all power and control wiring not indicated by Division 26 to provide a complete mechanical system.
- 2) Requirements for wiring, materials, methods, and components shall be per Division 26 specifications. Individual motor starters, disconnect switches (other than disconnects fed from a service transformer), control power transformers, and variable frequency drives (VFD) for mechanical equipment shall be furnished and installed by this Subcontractor. Motor-rated toggle switches shall be furnished and installed under Division 26 and sized in accordance with equipment nameplate data. Provide separate ground wire sized per NEC. Motor starters provided for mechanical equipment in a motor control center shall be furnished under Division 26.
- 3) Subcontractor shall provide and install all control wiring and control power transformers as details in the contract documents and specifications.
- 4) Subcontractor shall provide and install all control power transformers for all fire and fire/smoke dampers.
- 5) Subcontractor is responsible for providing and installing all control wiring for fire and fire/smoke dampers.
- 6) Subcontractor is responsible for working with the fire alarm contractor to tie fire and fire/smoke dampers into the fire alarm system so the position of them can be monitored by the fire alarm panel.
- 7) Subcontractor shall receive inventory, store, schedule, handle, protect, and install any Owner furnished mechanical equipment as indicated in the Contract Documents.
- 8) Disconnect switches for equipment fed directly from a service transformer shall be furnished and installed under Division 26.

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- 9) Wiring and raceway shall be provided under Division 26 up to a termination point consisting of a starter, control power transformer, VFD, motor-rated toggle switch, or disconnect switch. Line side terminations shall be provided under Division 26. Branch circuit wiring and raceway from the termination point to the mechanical equipment, including final connections shall be provided under Division 23.
- 10) An additional disconnect switch, furnished and installed under Division 23, shall be required "within sight" of the equipment/motor per Code if the upstream disconnect switch, starter, or VFD is remotely located.
- 11) Relays, actuators, timers, seven-day clocks, alternators, pressure, vacuum, float, flow, pneumatic-electric, and electric-pneumatic switches, aqua-stats, freeze-stats, line and low voltage thermostats, thermals, remote selector switches, remote push-button stations, emergency break-glass stations, interlocking, disconnect switches beyond termination point, and other appurtenances associated with equipment under Division 23 shall be furnished, installed and wired under Division 23.
- 12) Unless otherwise indicated, wiring and control power transformers required for Division 23 controls, instrumentation, motor actuators, and plumbing fixtures shall be furnished and installed under Division 23.
- 13) The Subcontractor is to refer to Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections as it relates to the specification section.
- 14) Duct smoke detectors, if required by NCBC, shall be furnished and wired by Division 28, installed by Division 23. Fire alarm AHU shut down defeat switch shall be inside or immediately beside the fire alarm panel. The shutdown defeat circuit shall be wired from the fire alarm control panel to a termination point, adjacent to the AHU control, under Division 28. AHU control wiring from the termination point to the equipment shall be under Division 23

The following items are a general scope listing for work to be included in this agreement for **Earthwork (As Applicable)**

- 1) Subcontractor assumes the liability associated with sediment entering the storm sewer system or discharging off-site, and will immediately rectify all unacceptable conditions.
- 2) Subcontractor is responsible for the re-wetting, aeration, and/or drying of existing soil materials to obtain optimum moisture content for use as compacted fill. In the event weather conditions do not allow Subcontractor to dry wet materials required to perform the work within the scheduled time frame, Subcontractor shall remove and dispose of the wet material and replace with suitable soil as not to delay project schedule at no additional cost to Contractor.
- 3) Subcontractor is responsible for dewatering. Dewatering is considered all-natural grade water as well as "surface or rain water" for all excavations under this agreement. Dewatering includes all required pumps, sumps, stone, etc. for proper execution of work under this agreement and for the continual maintenance of exposed soil conditions to access the work under this agreement.
 - a) Subcontractor shall maintain a suitable soil substrate condition once exposed under this agreement. The Owner (or the Contractor) will not be responsible to reimburse Subcontractor for the costs to remove unsuitable soil and dispose of off-site or for the replacement costs of suitable fill (or stone backfill) for

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exposed substrate conditions not achieving compactions due to excessive moisture content not inherent with undisturbed soil conditions on-site.

- 4) Subcontractor is responsible for final setting and adjusting of all cleanouts, etc. (Add. #1)
- 5) All excavated/graded spoils generated under this agreement shall be hauled offsite and disposed of accordingly by this Subcontractor.
- 6) Subcontractor is responsible for trench and excavation safety including sheet, shoring, trench boxes, etc.
- 7) Subcontractor is responsible to for providing, installing, maintaining, and removing excavation safety barricades, perimeter fencing, flagging, etc.
- 8) Subcontractor shall provide all ladders and access/egress points
- 9) Subcontractor shall provide all air quality monitoring in excavations
- 10) Excavations shall not be left exposed during non-working hours. Each day's work shall be backfilled to afford other trades work accessibility on and around the site.
- 11) Subcontractor will provide for all applicable areas on site: Sheeting, shoring, supporting to safely complete work

The following items are a general scope listing for work to be included in this agreement for BIM / ILM (Integrated Life Cycle Management):

- 1) This scope of work includes BIM / ILM coordination and execution for the UNC Charlotte Science Building Project. Subcontractor is responsible for full adherence to the approved BIM / ILM execution plan as outlined in the Bid Manual.
- 2) This Subcontractor will be responsible for leading the BIM coordination and ILM efforts for all other applicable subcontractors. Reference the BIM / ILM plan included within the Bid Manual.

Alternates:

- Alt. #1:_____
- Alt. #2: _____
- Alt. #3: _____ _
- Alt. #4: _____
- Alt. #7: _____
- Alt. #12: _________ (Add. #2)

Arch. Unit Prices

- AUP-07:
- AUP-08: _____
- AUP-09:
- AUP-10:



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- AUP-11: _____
- -
- AUP-12: _____ AUP-13: _____

CM Unit Prices

- CMUP-05: _____
- CMUP-06: _____ _
- CMUP-07: _____ -

Allowances (reference bid form attachment 04)

- **Allow. #04**
- Allow. #05 _
- _ Allow. #06
- Allow, #07
- **Allow.** #08 _
- **Allow. #09** -
- **Allow. #10**

Trade Specific Scope of Work Exclusions:

The following is a complete and exhaustive list of exclusions from this Scope of Work:

1. HVAC Test & Balance – Coordination with HVAC Test & Balance contractor is included in this Scope of Work.

End of Document



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BID PACKAGES SCOPES OF WORK REVISION #1: 5/10/19 REVISION #2: 5/16/19 REVISION #3: 5/23/19 Bid Package Name: Electrical/Security

Bid Package Number: Ph. III: BP-26A

Intent:

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. This Subcontractor acknowledges that the following Scope of Work detail is provided as a courtesy and must be used in conjunction with <u>all</u> Project Documents. Scope of Work detail listed is not intended to describe a complete and final work scope. It is provided as a summary overview only.

Scope of Work Summary:

Furnishing of all labor, engineering, submittals and shop drawings, fabrication, material, equipment and tools, competent and certified supervision, hoisting, scaffolding, and transportation required for a complete installation of all **Electrical/Security** items referenced in this scope of work and shown in the contract documents and specifications.

Specification Reference:

The organization of the specifications into divisions, sections and articles, and the arrangement of the drawings shall not control the CM@R in dividing the work among the Subcontractors or in establishing the extent of the Work to be performed by any Subcontractor.

Reference is made to the following Divisions of Work and Specification Sections which relate to the Scope of Work, but is in no way intended to limit or alter the intent of the Contract Documents or Work in anyway.

Primary Specification Sections:

- All Division 00 Procurement and Contracting Requirements
- All Division 01 General Requirements
- UNCC Design and Construction Manual: https://facilities.uncc.edu/files/media/designandconstructionmanualwhole.pdf
- State Construction Manual, State of North Carolina: https://files.nc.gov/ncdoa/documents/files/SCOConstructionManual2017_3.pdf
- All Division 26 Electrical
- All Division 28 Electronic Safety and Security

Related Specification Sections:

- 061053 Miscellaneous Rough Carpentry
- 078413 Penetration Firestopping
- 079200 Joint Sealants
- 033000 Cast-In-Place Concrete

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- 083110 Access Doors and Frames
- 200000 Common Mechanical/Electrical Requirements
- Division 5 (As Applicable)
- Division 7 (As Applicable)
- Division 8 (As Applicable)
- Division 9 (As Applicable)
- Division 10 (As Applicable)
- Division 11 (As Applicable)
- Division 12 (As Applicable)
- Division 13 (As Applicable)
- Division 14 (As Applicable)
- Division 22 (As Applicable)
- Division 27 (As Applicable)
- Division 28 (As Applicable)
- Division 32 (As Applicable)
- Division 31 (As Applicable)
- Division 33 (As Applicable)

This Bid Package is for Work in accordance with all Contract Documents as listed in Exhibit A of this Subcontract and all work to be performed. The work of this Bid Package includes, but is not specifically limited to:

General Scope of Work Items:

The following is an outline of general performance items that are expected of this subcontractor during execution of this work and are specifically included, but are not limited to, under this agreement:

Closeout, Attic Stock, Owner Training, Warranties, etc.

- 1) All Owner Training requirements shall be completed <u>90 days prior</u> to schedule project completion date or earlier if noted elsewhere in the Contract Documents.
- 2) All warranties start at the Project Completion Date or date approved by Owner/SCO, NOT at start-up. Subcontractor is responsible for all warranty costs.
- 3) This subcontractor will not be allowed to bill for stored or installed equipment on-site if the Operation and Maintenance Manuals for said equipment are not submitted and approved.
- 4) Provide all 'Extra Materials', attic stock, spare parts, 'Maintenance Tools', etc. for Owner to Construction Manager in unopened and clearly labeled containers/packages. All items shall be turned over no later than <u>90 days prior</u> to the Project Completion date. All items shall be transmitted to Construction Manager, and delivered and distributed to a location on campus as determined by Owner.

Schedule / Submittals / Material Expediting / Work Schedule

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- 1) All costs for expediting materials to the site to avoid schedule delays are herein included.
- 2) Submittals for any equipment/materials that need to be lifted into the penthouse shall be expedited to ensure material is on-site and in the penthouse prior to the roof being installed. Any costs associated with expediting fabrication as required are included. The installation of the roof will not be delayed due to delays in submittals and fabrication of material. If the materials/equipment are not on-site prior to the roof being installed, it will be the responsibility of this subcontractor to fabricate equipment in a manner that it can be loaded into the penthouse with the roof on.
- 3) This Subcontractor acknowledges that the Project will have a phased turnover in accordance with the Project Schedule as necessary, to comply with Contract Documents. There are no limits to the number of mobilizations required to achieve a complete Project. At the completion retest and rebalance to confirm intent of Contract Documents is met. This subcontractor to provide supervision for coordination with the Commissioning Agent and Test & Balance subcontractor. This applies to all systems installed by this subcontractor.
- 4) Subcontractor has reviewed the Drawings & Specification for this Project. Subcontractor has found no obvious omissions and further agrees that the Work of this Agreement and the Project can be constructed within the milestone and completion dates without claims for delay or impact costs, unless substantial Owner directed Scope changes occur.
- 5) Subcontractor will evaluate access to the mechanical, electrical rooms, penthouse areas, etc. for installation of any equipment. If it is necessary to set equipment prior to certain structural elements being installed due to lack of access, this subcontractor will expedite the delivery of such equipment in accordance with the project schedule and will set equipment with no additional costs incurred by the Construction Manager or Owner.
- 6) Subcontractor is responsible to expedite all vertical work as necessary and in compliance with the Project Schedule. Vertical work shall proceed from starting point to completion point non-stop as dictated by the flow of work and the Project Schedule. All vertical work shall be completed and tested prior to progressing. Failure to provide priority to this work will make this Subcontractor responsible for all costs to re-mobilize trades to in-fill openings, provide temporary enclosures, etc. as deemed by Construction Manager.
- 7) This subcontract will staff the project from commencement to completion with a crew and project site lead knowledgeable of the scope of work for which this Subcontractor will be performing. The size of this crew may vary throughout the duration of the project. However, at no time throughout the duration of the project will this Subcontractor understaff this project so as to not be able to meet the Project Schedule. The CM@R reserves the right at any time throughout the duration of this Subcontractor's installation to direct this Subcontractor to increase the crew size to maintain and meet the Project Schedule. This Subcontractor shall adhere to this direction within 24 hours of the CM@R's request without fail.
- 8) This Subcontractor agrees to actively participate in scheduled pull planning, coordination, and scheduling meetings as part of the Pre-Construction and Pre-Installation process. A senior, knowledgeable, decision making representative will be designated by this Subcontractor's organization to be engaged and actively participate on the behalf of this Subcontractor for these meetings. The subcontractor acknowledges and

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agrees that the decisions made by this Subcontractor's designated representative is binding and will be adhered to by this Subcontractor unless expressly approved otherwise by the CM@R for the duration of the project.

Mockup

- Subcontractor shall expedite all mock up material as outlined in the contract documents for delivery within thirty (30) days of notice of award in order to construct all mock-up conditions as outlined in the contract documents to illustrate rough-in requirements, finishes, etc. of specified materials furnished under this agreement. All required mock-up conditions shall be complete within ninety (90) days of notice of award.
- 2) Subcontractor to provide any and all materials necessary to complete mockups for each type of penetration through a rated wall / assembly. This includes duct material, piping material, sleeves, and fire/smoke sealing materials, as well as the installation of each.

General

- 1) All reference to 'by Contractor' and 'by General Contractor' and 'by Construction Manager' on the Electrical Drawings and specifications shall be assumed as 'By this Subcontractor'.
- 2) Subcontractor is the firm who will be providing a bid for this package, hereinafter referred to as the Subcontractor.
- 3) Construction Manager at Risk is Balfour Beatty Construction, hereinafter referred to as CM@R.
- 4) This scope of work includes BIM / ILM coordination and execution for the UNC Charlotte Science Building Project. Subcontractor is responsible for full adherence to the approved BIM / ILM execution plan as outlined in the Bid Manual
- 5) The subcontractor is responsible for all delegated design items and as-built documentation as outlined in the contract documents.
- 6) Subcontractor agrees to provide a complete system that complies with all applicable codes and the Contract Documents.
- 7) Multiple mobilizations as required to complete Scope of Work is included.
- 8) Scoping of all existing conditions prior to start of work under this agreement is included for any operations working around existing utilities and outside construction limits areas by this Subcontractor.
- 9) All scaffolding, man lifts, cranes, hoists, forklifts, etc. to install and distribute this scope of work is included. Hoisting of all materials, equipment, and trash removal at elevated conditions is included by this Subcontractor.
 - a) Subcontractor shall be responsible for any repair to the crane/lift road caused by any equipment under this scope.
 - b) Subcontractor is to include in their scope and outrigger that will be installed off the side of the building and utilized to load material for this scope of work. Relocating the outrigger from floor to floor as the work progresses up the building is included.

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- c) Any ground/pad prep and installation required for cranes being utilized for the completion of this scope of work are included in this scope.
- d) Any lifts or scaffolds used in areas with finished floors shall have Masonite under them to prevent damage to the finished floors.
- e) Any and all lifts inside the building must be diapered at all times to prevent damage to floors in the event of a hydraulic leak, in the event of a hydraulic leak it is to the discretion of the CM@R to direct blame to the responsible party. Any damages associated with leaks shall be the sole responsibility of the subcontractor to correct.
- 10) Daily cleanup and disposal of all waste associated with the subcontractor's scope of work to an on-site dumpster provided by CM@R is included. If this requirement is not met by the subcontractor daily, the construction manager reserves the right bring in labor to clean the jobsite at the expense of the subcontractor.
- 11) The building permit will be provided by the Owner. However, this Subcontractor shall be responsible for any additional permits, bonds, or fees as required to complete this Scope of Work.
- 12) Vehicle and Pedestrian Traffic control is included by this Subcontractor for all activities on site for this Subcontractor. The CM@R will provide Vehicle and Pedestrian Traffic specifically at the site entrances and adjacent pedestrian pathways only.
- 13) Subcontractor is responsible for ensuring no mud is tracked from the site onto campus roads, walkways, and inside buildings. Washing of truck and equipment tires prior to leaving the site is included by this Subcontractor utilizing truck and tire wash stations which will be provided by the CM@R. Any dirt/mud tracked on campus roads, walkways, or inside building by this subcontractor shall be immediately cleaned by this subcontractor at no additional cost.
- 14) This Subcontractor is responsible for the repairs and replacement of sidewalks, curb/gutter, asphalt paving damaged as a result of this work.
- 15) Subcontractor shall assume a completed structure for installation of equipment and piping. No provisions will be allowed for "leave-outs" unless specifically noted in the contract documents. All costs associated with breaking down equipment to access rooms is herein included.
- 16) The Subcontractor will be responsible to adequately protect all roofing membrane, coping, and roofing curbs during execution of all associated scopes of work as part of this agreement. It will be the responsibility of this Subcontractor to immediately report any damage to the Construction Manager and provide adequate temporary protection of any damage to the roofing membrane so as to prevent any water intrusion into the building. Damage as a result of water intrusion inside the building is the responsibility of this Subcontractor. Once temporary protection is secured, this Subcontractor will coordinate with a National Roofing Contractors Association certified roofing contractor to repair the damage according to the applicable standards.
- 17) Subcontractor shall provide protection of existing utilities (pipes, valves, hangers, etc.) during installation. Damages to existing utilities shall be repaired or replaced by this Subcontractor if damaged while performing work under this agreement. Any known damage to existing utilities (i.e. gas line, steam, etc.) shall be brought

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to the immediate attention of the Construction Manager or emergency services so adequate notice can be given or evacuation may take place.

- 18) Subcontractor shall submit to Construction Manager all welders' certificates and crane inspection certifications ten (10) days prior to starting work. All certifications and inspections shall be current in accordance with OSHA and the Contract Documents.
- 19) Structure elevations and lengths of piping indicated on the document are for information purposes only. All information shall be field verified for lengths; finish grade elevations shall be coordinate with final grading drawings, etc.
- 20) Subcontractor shall layout all work under this agreement from Construction Manager provided horizontal (one north-south and one east-west) and vertical control (one benchmark) points.
- 21) Final cleaning of installations completed under this agreement is included in this Scope of Work.
- 22) Subcontractor shall insure all installations completed under this agreement have sufficient specified and/or code required separations and clearances.
- 23) Subcontractor shall verify locations of all systems installed as part of the Early Package II. All costs associated with fittings, tie-ins, etc. to complete systems is included.
- 24) Subcontractor shall utilize gas or diesel operated welding machines. Welding will not be done using on-site temporary electrical power. Subcontractor will provide weld shields to protect surrounding finishes and visual harm to others.
- 25) Subcontractor's site supervision shall be required to attend a daily 8a.m. coordination meeting. If you have multiple supervisors for multiple floors, they each need to be in attendance.
- 26) This Subcontractor shall complete all reports as well as be responsible for communicating, maintain, and submitting field quality control test reports for all scopes of work as applicable. This documentation will be submitted via the contract document submittal process and shall be approved by and owners representative.
- 27) Subcontractor is responsible for notifying Construction Manager, Owner, Architect, and governing agencies of all tie-ins and shut downs of existing utility systems no less than 30 days prior to shut-down and tie-ins. All shut-down and tie-ins will commence only with the expressed written approval of the Construction Manager, Owner, Architect, and Governing Agencies.
 - a) Subcontractor is responsible for ensuring power is maintained to the building at all times during construction. Subcontractor is responsible for providing a temporary generator to maintain power to the building during shutdowns to ensure construction activities are not impacted. Fueling of the generator for the duration of the shutdown is included.
- 28) Subcontractor understands all exterior and interior building finishes are to be protected by this Subcontractor to perform work under this agreement. Subcontractor is responsible to protect surrounding substrates and finishes from work of this Scope.
 - a) Subcontractor understands that all existing finish work is to be protected by this Subcontractor and this Subcontractor shall be responsible for costs to make any repairs or a portion thereof of unidentifiable damage caused jointly with other MEP trades.

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- 29) All rough-in work included in this Scope of Work is to be constructed in accordance with contract documents and approved coordination document unless approved otherwise by Owner and Architect.
- 30) Subcontractor shall assume all materials under this agreement will be prefabricated off-site due to limitations of on-site storage unless approved otherwise by the Construction Manager, Owner, Architect / Engineer. Subcontractor shall assume no on-site storage of materials is allowed. Establishing a fabrication shop onsite will only be allowed with the expressed approval of the Construction Manager, Owner, Architect / Engineer.
- 31) Subcontractor shall coordinate and work with Test and Balance contractor ensure system can be correctly balanced. Subcontractor agrees to make any corrections to installations under this agreement required by Test and Balance contractor within 5 calendar days.
- 32) Subcontractor will be responsible for all asphalt and concrete patching as a result of the completion of this Subcontractors scope of work.
- 33) Subcontractor is responsible for identifying all potential conflicts with building structure systems/elements. Subcontractor shall include all required piping/duct modifications, fittings, etc. to comply with final system layouts with approved coordination drawings
- 34) The Subcontractor will be responsible to comply with a coordination schedule shall be as determined by the Construction Manager; this schedule will be based up the milestones outlined in the Project Schedule.
 - a) Each Subcontractor is responsible for total coordination of all underground utilities and for providing complete utilities system. There will be no cost or time considerations given for adjustments of structures or pipe runs due to conflicts arising from lack of coordination with adjacent utilities, structures, or other Subcontractors. First installed does not constitute grounds for a change order for installation of any uncoordinated work.
 - b) Each Subcontractor designated to contribute information pertinent to the development of the coordination drawings shall attend and participate in the scheduled coordination meetings as directed by the CM.
 - c) An initial coordination meeting will be held prior to the production of any coordination drawings. Electronic copies of selected CAD (computer aided design) drawing files with architectural backgrounds will be given to the subcontractors at this meeting for preparation of layout drawings within 30 days of project award. Each subcontractor will be responsible for any cost to convert electronic CAD files furnished by the CM. After each subcontractor has fulfilled its obligations it shall return the drawings and electronic files to the mechanical subcontractor for generation of clash detection reports and/or submittal to the Design Team for final approval.
 - i) If any subcontractor fails to produce all of its initial coordination drawings within the time allocated, the CM will produce said drawings, and all the costs of producing said drawings will be at the expense of the Subcontractor.
 - ii) In order to complete the MEP coordination efforts per the Project Schedule, this Subcontractor will be responsible for completing coordination efforts for all scopes of work simultaneously utilizing the information provided by all coordinating parties.

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- d) Each trade/subcontractor shall make each respective team available for one meeting per week (of a minimum 8 hours) for duration of notice of award until all buildings have completed coordination drawings.
- e) The intent is each coordination team as defined above shall be available for one (1) meeting per week.
- f) Coordination efforts are not to take place strictly on the day of the in-person meeting. Coordination efforts shall be ongoing at all times during the week. The intent of the in-person meetings is to evaluate any major conflicts or areas of concern and to collaborate on the drawings generated over the past week.

Testing & Inspections

- 1) All testing, certification tests, etc. under direction of Owner, Engineer, Inspectors, Contract Documents, and governmental authority(s) having jurisdiction are herein included.
- 2) Subcontractor is responsible for notifying Construction Manager, Owner, Architect, and governing agencies of all inspection requests.
- 3) Provide testing, cleaning, certification, and start-up in whole or in part to meet project schedule on a per building basis.
- 4) It is understood and agreed that any Work under this Scope found to be in non-compliance by the Authorities Having Jurisdiction, the Owner, the Design Team, and/or the Construction Manager shall be corrected and re-tested at no cost to Construction Manager and/or Owner. Any costs to expedite the re-test of scopes of work shall be the sole responsibility to meet the Project Schedule.
- 5) It is the responsibility of this Subcontractor to anticipate inspection delays in the installation durations and sequence such work ahead of others as not to impose delays in the schedule. This shall be construed for DOI, Engineer, UNCC maintenance and facilities, Fire Marshal, State Construction Office, etc.
- 6) This subcontractor is responsible for any costs associated with failed inspections, including but not limited to reinspection fees. The subcontractor is responsible for any acceleration costs to correct the scope(s) of work that failed inspection to maintain the Project Schedule including but not limited to increase crew size, multiple crews, concurrent shift work, expediting of materials, etc.
- 7) Subcontractor will be responsible for providing a comprehensive schedule for all testing and commissioning required in coordination with the Owner's Testing agent for review no less than 90 days prior to the commencement of testing activities. Adjustment to testing activity start and completion dates to coordinate with the availability of the Owner's Testing agent will be the responsibility at no cost to the Owner or the Construction Manager.
- 8) Coordinate all testing, pre-functional start-up, as well as start-up, this also includes inspections, and punchlist with testing agent hired by the Owner for this Project at no additional cost to Construction Manager.
- 9) Subcontractor shall coordinate and perform Owner Training of all equipment start-up and check-out as described in the Documents.
- 10) Competent supervision shall be provided by the Subcontractor anytime a testing meeting is taking place. Also, competent supervision shall be provided during all functional performance testing and jobsite inspections.

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- 11) The superintendent or the subcontractor's in-house testing agent shall be on-site in a full-time capacity during the testing of their respective systems. This includes at the turnover of each facility/phase and once more during final testing of entire project.
- 12) This subcontractor is responsible for any costs associated with retesting as required to provide a complete and operable, fully tested facility. There are no limits to the number of retests included; retesting shall be performed until equipment under this agreement has been fully tested and meets the design intent for the project.
- 13) This Subcontractor shall complete all reports as well as be responsible for communicating, maintain, and submitting field quality control test reports for all scopes of work as applicable. This documentation will be submitted via the contract document submittal process and shall be approved by and owners representative.
- 14) Subcontractor shall be responsible for providing safe access for testing agency and Engineer of Record to the Work being fabricated, stored, or installed so that required inspection and testing may be accomplished. It is understood and agreed that any work under this scope found to be in non-compliance shall be corrected and re-tested at no cost to Construction Manager and/or Owner.

Commissioning

- 1) Subcontractor will cooperate with Owner's commissioning agent and comply with all requirements.
- 2) Subcontractor will be responsible to provide a comprehensive schedule for all testing required in coordination with the Owner's Commissioning agent for review no less than 90 days prior to the commencement of testing and commissioning activities. Adjustment to testing activity start and completion dates to coordinate with the availability of the Owner's Commissioning agent will be the responsibility at no cost to the Owner or the Construction Manager.
- 3) Coordinate all testing, inspections, and punch-list with commissioning agent hired by the Owner for this Project at no additional cost to Construction Manager.
- 4) Subcontractor shall coordinate and perform Commissioning and Owner Training of all equipment start-up and check-out as described in the Documents.
- 5) Competent supervision shall be provided by the Subcontractor anytime a commissioning meeting is taking place. Also, competent supervision shall be provided during all functional performance testing and jobsite inspections.
- 6) The subcontractor shall have an in-house Commissioning Manager. This individual shall be onsite full-time once commissioning of their respective systems has started until the time that all systems are fully commissioned and turned over to ownership. This includes at the turnover of each facility/phase and once more during final commissioning of entire project.
- 7) This subcontractor is responsible for any costs associated with retesting as required to provide a complete and operable, fully commissioned facility. There are no limits to the number of retests included; retesting shall be performed until equipment under this agreement has been fully commissioned and meets the design intent for the project.



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Hangers, Supports, Penetrations, & Block-outs

- Subcontractor shall furnish and install all required supports for this Work including, but not limited to anchor bolts, hangers, isolators, channels, angles, embeds, etc. All items shall be hot dipped galvanized finish, unless noted otherwise in the Contract Documents.
- 2) All material and equipment shall be installed in a manner which will not overload the structural elements of the building. Should additional supports be required to distribute loads over more than one structural element, same shall be included by this Subcontractor. All items hanging from steel trusses shall be hung off of truss panel points.
- 3) The use of powder actuated fasteners is not permitted on this project.

Related Work / Divisions

1) Specification Section 033000: Concrete

- a) Subcontractor shall coordinate locations of all required equipment pads. Subcontractor will be responsible for laying out pads to be poured by the concrete subcontractor.
 - i) Layout drawings are to be provided at time of initial project submittals prior to rebar shop drawings being approved.
- b) Any grouting for piping, fixtures, or equipment is included.

2) Specification Sections 078413: Penetration Firestopping

- a) Subcontractor shall seal, pack, fire safe, etc. all smoke and fire rated penetrations in walls, floors, and ceilings as required by the Contract Documents and as to maintain required ratings.
- b) This subcontractor is responsible during the submittal and execution of this scope of work to ensure that the penetration firestopping scope for which they are responsible for has continuity throughout the project.
- c) Provide a crew experienced in installing penetration firestopping similar in material, design, and extent to that indicated for this Project, whose work has resulted in construction with a record of successful performance. Manufacturer's willingness to sell its penetration firestopping products to Contractor or to Installer engaged by Contractor does not in itself confer qualification on buyer.
- d) Ensure that no fireproofing material is installed for penetration firestopping when ambient or substrate temperatures are outside limits permitted by penetration firestopping manufacturers or when substrates are wet because of rain, frost, condensation, or other causes. Any cost to remediate will be the responsibility of the Subcontractor.
- e) Subcontractor is responsible to notify Owner's testing agency at least seven days in advance of penetration firestopping installations; confirm dates and times on day preceding each series of installations.

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- f) Subcontractor has full responsibility to coordinate construction of openings and penetrating items to ensure that penetration firestopping is installed according to specified requirements. Coordinate sizing of sleeves, openings, core-drilled holes, or cut openings to accommodate penetration firestopping.
- g) Subcontractor is responsible to examine substrates and conditions, with Installer present, for compliance with requirements for opening configurations, penetrating items, substrates, and other conditions affecting performance of the Work.
- h) Subcontractor will be responsible to provide for each location where a fire-resistance-rated floor or wall assembly is penetrated, provide a UL-listed through-penetration firestop system selected from the applicable UL number range listed in the schedule below that complies with the requirements of this Section and is suitable for the penetration conditions indicated for the Project.

3) Specification Section 079200: Joint Sealant

- a) Subcontractor is responsible to water seal, weather caulk, aesthetic caulk, etc. all sleeves/penetrations and fixture perimeters as required by the Contract Documents and approved coordination documents.
 - i) The Subcontractor will submit samples for applicable products as outlined in the contract documents and this specification section as well as a first look that must be approved by and owner representative.
- b) The Subcontractor shall provide an annotated drawing and joint sealant schedule of locations where joint sealants are to be coordinated and installed with applicable scopes of work.
- c) The Subcontractor will submit samples for applicable products as outlined in the contract documents and this specification section.
- d) Coordinate the installation of joint sealants with acceptable project conditions as outlined in the specification section and the contract documents.

4) Specification Section 099123: Painting

- a) Subcontractor shall adequately prepare all substrates to be painted. This shall include coordination with the painting trade to ensure proper adherence between various products.
- b) Surfaces of equipment and materials are to be thoroughly cleansed and left ready for painting in accordance with Architectural Painting Specifications. All damage to paint primers or applied factory finishes which has occurred during installation shall be repaired by this Subcontractor. All dents or surface damages shall also be repaired or replaced prior to turnover to the owner.

5) Specification Section 083110: Access Doors

a) All access panels/doors and covers as required by code, or indicated in the Contract Documents, that's purpose is to provide access to installations under this agreement, are by this Subcontractor. The indicated access doors are to provide access to equipment, valves, etc. These access doors are for access through architectural ceilings and walls. Rated panels are included to match ceiling and wall types.

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- b) Subcontractor is responsible for coordinating the locations and size of required framed openings with respective trades during the construction of walls, ceilings, and floors.
- c) All access doors are to be laid-out on the floor by this subcontractor with sizes and locations of framed opening. Access doors are to be turned over to the Drywall contractor for installation prior to commencing with ceiling and/or wall framing activities. If layout sizes or locations are not correct, or if they are not laid out prior to beginning ceiling framing operations, this contractor shall be responsible for the cost of any rework incurred by Drywall/Framing contractor.
- d) Quantity of access doors shall be minimized and considered as part of the MEPF coordination process.
- e) Subcontractor is responsible for coordinating with all other trades providing access doors to ensure that all access doors are keyed alike.
- 6) **Sleeves, Penetrations, Curbs, & Sealing** The following is a general outline of items included, but not limited to, under this agreement for Sleeves, Penetrations, Curbs, and Sealing.
 - a) Subcontractor shall layout, install, and strip all required sleeves and protect from elements.
 - b) Formed openings in masonry and concrete walls are herein included.
 - c) Concrete/CMU saw cuts, concrete/CMU coring & drilling removal, and concrete replacement as required to install Work within this Scope is included in this Scope of Work. No saw cutting or core drilling is to be performed without written approval from Construction Manager and Architect/Engineer. All penetrations and hangers shall be coordinated withal MEP subcontractors and CM.
 - d) All required pre-fabricated roof curbs and mechanical roof supports are herein included. Furnishing and installation of curbs and supports by this Subcontractor shall be in strict accordance with roofing installation procedures. Include any required counter flashing, and preservative treated wood nailers are included in this Scope.
 - e) Subcontractor shall layout, cut, and protect any and all penetrations through metal decking as required to complete this scope of work. (Add. #2)

Trade Specific Scope of Work Items:

The following is a general outline of items specifically included, but not limited to, under this agreement:

- 1) This scope of work if for the UNC Charlotte Science Building Project.
- 2) Subcontractor is responsible for cutting all acoustical ceiling tiles for electrical system installations.
- 3) Provide, and install a complete electrical, fire alarm, and security system as detailed in the contract documents.
- 4) Temporary Utilities The following is a general outline of items included, but not limited to, under this agreement for Temporary Utilities. All items outlined with in this scope of work shall be Inspected and approved by State Contraction Electrical Inspector.
 - a) Furnish, install, maintain, and remove the following temporary utilities:

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- i) Provide any and all temporary power to the material hoists as located in the site logistics section of the Bid Manual. This shall include conduit, wire, terminations, etc. for a complete and operable material hoist system at each building.
 - (1) Assume 400 amp temporary service to material hoist, including any disconnects, fuses, etc. as required by applicable codes/regulations.
 - (2) Electrical contractor will be responsible for installing and wiring the step-down transformer to be provided by the hoist installer.
- ii) Subcontractor shall provide a separate three phase 200-amp power panel and three phase 200 amp lighting panel to be located by the Construction Manager at a central location. Each panel shall be extended to next floor. All riser wiring shall be in conduit. All temporary power panels and wiring are to be removed by this Subcontractor prior to final inspections. Smoke seal / fire caulk required for wire penetrations is herein included.
- iii) Subcontractor shall provide a minimum of two (4 GFI quad outlet panels) per floor to be located by the Construction Manager on a wall mounted 24"x48" plywood backer board Unistrut rack skid. All temporary wiring shall be installed in corridor below ceiling grid and over the door frames.
- iv) Subcontractor shall provide all temporary power required for installation and operation of the building elevators. Coordination of electrical requirements for the elevators with the elevator contractor is included.
- v) Subcontractor shall install and maintain a scaffold, beam, and double ³/₄" plywood protection deck over each building transformer/switch to protect transformer from falling debris for duration of project.
- vi) Subcontractor is responsible for obtaining SCO inspection for all temporary installations.
- vii)Subcontractor shall provide separate electric service for lighting and power so that the lighting service can be shut down each night from a single location. Hallways and stairwells shall be equipped with night lighting for egress. All non-egress areas are to be switched so they can be turned off at night.
- b) Subcontractor shall provide temporary lighting as needed to provide minimum of 5-foot candles in any area of the building. Temp. Lighting must be able to be turned off without interrupting power / outlets.
 - i) Maintenance of temporary lighting and replacement of damaged bulbs and components throughout the project is included.
 - ii) Relocating temporary lighting throughout the project to avoid conflicts with construction is included.
 - iii) Provide two (2) safely lighted entrance into building structure in a location determined by Construction Manager.
 - iv) Provide temporary site lighting to illuminate no less than 10' around the building foot print, at each lighted entrance, and at the job site trailer.
- c) Meet all permanent power conditions and milestones for start-up of HVAC systems. Should Subcontractor fail to provide permanent power under this agreement in a timely manner to meet start-up date requirements, then this Subcontractor shall provide all means for temporary services including

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generators, wiring, disconnects, surge protection, fuel costs, delivery costs, etc. as maybe required to maintain start-up dates.

- d) Subcontractor will be responsible for providing temporary internet service into the building. This shall consist of two wireless access points per floor at locations to be determined by the CM@R. Subcontractor is required to provide infrastructure and necessary cabling from contractor internet service at the construction trailer to a designated closet in the building.
- 5) Early start-up of the electrical equipment shall in no way encroach upon any warranty requirements of the Specifications. Subcontractor shall advise and coordinate with CM@R all items that are or will be received in order to achieve early start-up of equipment.
- 6) Subcontractor shall provide labor and material to replace 2% of light fixture lenses and trim that are damaged as a result of unidentifiable damage. Any unused portion of this allowance shall be returned to the GC at the end of the project via deductive Change Order to this subcontractor's agreement.
- 7) Subcontractor to provide all additional attic stock as detailed in the contract documents and specifications.
- 8) Subcontractor shall make all final low voltage connections for all electrified door hardware. Door hardware subcontractor to work in close coordination with this package to ensure proper connection of hardware.

The following items are a general scope listing for work to be included in this agreement for **Electrical**:

- 1) Subcontractor is responsible for tying into existing underground electrical & data duct banks which were installed to hand holes outside of the building during EP2. Subcontractor will be responsible for tying into the hand holes and installing the duct banks into the building to their final locations and making the final terminations inside of the Science Building.
 - a) This includes any data duct banks. The data cabling in the duct banks will be installed by the data subcontractor.
- 2) Subcontractor will be responsible for coordination of building emergency power testing with the EP2 electrical contractor that installed the emergency generators.
- 3) Subcontractor shall include installation and UL label and number certification of a complete lightning protection systems as needed to complete the project.
- 4) Provide, and install complete electrical, fire alarm, and security systems as detailed in the contract documents.
- 5) All power systems including conduit, wire, outlets, grounding, panels, disconnects, starters, controllers, metering, switchgear, transformers, etc.
- 6) This Subcontractor shall provide all power conduit, wiring, etc. to all plumbing, mechanical equipment, and fire protection equipment noted on Contract Documents
- 7) All site power and site lighting as indicated on site power plans are herein included, including conduit, wire, timers, daylight sensors, hand holes, boxes, poles bases, lamps, etc. for a complete and operable exterior lighting system.
 - a) All excavation, footings, concrete placement, etc. for exterior lighting as shown is included in this scope.
 - b) Any spoils removal as required is included.
 - c) Any concrete over conduit required that is less than the minimum 30" depth per detail 8/E1.21 is included.

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- d) Coordination and tie-in of canopy lighting with canopy provider is included.
- e) This Subcontractor will be responsible for coordinating the installation of exterior lighting poles as indicated in the contract drawings. Any dim or burned out blubs shall be replaced. This Subcontractor shall re-lamp all site lighting fixtures at the turnover of the entire facility this Subcontractor shall also re-lamp any site fixtures as required (dim or burned out) during construction.
- 8) Subcontractor shall provide and install all blue light emergency phones as shown.
- 9) Included herein is all cabling from exterior transformers/switches to permanent/temporary equipment provided under this agreement.
- 10) Included is all conduit, wire, terminal cabinets, devices, grounding, surge arrestors, batteries, control panels, remote panels, etc.
- 11) Labeling, tagging, and color coding of all items installed under this scope per the contract documents is included.
- 12) All junction boxes shall be marked and labeled per specs.
- 13) All interior lighting is herein included. Including but not limited to conduit, wire, fixtures, lamps, grounding, etc.
 - a) All low voltage lighting controls, sensors, switches, etc. as indicated in the Contract Documents are herein included.
 - b) This Subcontractor is to re-lamp interior fixtures, as required, at the time of turnover of each facility. Any dim or burned out blubs shall be replaced.
 - c) All secondary light fixture supports are included to structure
 - d) All key switching as indicated in Contract Documents
 - e) All lighting occupancy sensor wiring systems complete.
 - f) Coordination with drywall and ceiling contractors for light layout and installation/support is included.
- 14) This Subcontractor is responsible to coordinate all block-outs and pathways for entry into the building of the electrical scope of work with concrete and masonry subcontractor.
- 15) Subcontractor shall provide and mount transformers for automatic faucets and auto flush toilets as required.
- 16) Subcontractor to provide rough-in and final connection of all electrical related systems which are part of all laboratory fume hoods.
 - a) Final tie-in of power to fume hoods is included in this scope.
 - b) Subcontractor is responsible for coordination of all rough-in requirements with the fume hood supplier.
- 17) Subcontractor is responsible for coordination, rough-in, and final tie in of all laboratory equipment as called for in the equipment schedule in the contract documents.
 - a) This includes both contractor and owner furnished items.
 - b) Coordination of all rough-in requirements for these items is included with other trades.
- 18) Subcontractor is responsible for coordination, rough-in, and final tie in of all laboratory electrical devices & fixtures installed within laboratory casework and overhead service panels related to systems installed as part of this scope.

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- 19) Subcontractor is responsible for installing conduit & boxes with pull strings for all Tele/data, A/V, and IT items in the building. All cable tray, ladder racks, and support system are to be provided and installed by this subcontractor.
 - a) Low voltage wiring and devices will be installed by others (Data/Communications Subcontractor)
 - b) Coordination of required cable track, ladder racks, and conduit runs and locations with the Data/Communications subcontractor is included.
 - c) Provide covers for all j-boxes with labels.
- 20) Subcontractor is responsible for installing conduit and boxes with pull strings for all HVAC controls items in the building. (Add. #3)
 - a) Low voltage wiring and devices will be installed by others (HVAC Controls Subcontractor)
 - b) Coordination of required conduit runs and locations with the HVAC Controls subcontractor is included. - (Add. #3
 - c) All 120v wiring for power to control devices is included in this scope. -(Add.#1)
- 21) Subcontractor will be responsible for rough-in and providing power to all motorized roller shades. Connection of power to shades is part of this subcontract.
 - a) Subcontractor is responsible for installing conduit with pull strings as required for the roller shade controls system. Shade controllers/switches, low voltage wiring and final connection of these items will be by the roller shade installer.
- 22) Subcontractor will be responsible for rough-in and providing power to all motorized projection screens. Connection of power to projection screens is part of this subcontract.
 - a) Projection screen controllers/switches will be provided by the projection screen contractor and turned over to this subcontractor for mounting and installation.
 - b) Subcontractor is responsible for providing and installing conduit and all required wiring, both power and low voltage, to all devices in order to provide a complete functioning system. Final connection to all devices is included in this scope. (Ref. 2/E9.03)
 - c) Testing in coordination with projection screen installer is included.
- 23) Subcontractor shall provide and install the 6-inch beverage bundle sleeve underground in the future café area as shown on sheet E4.10D.

The following items are a general scope listing for work to be included in this agreement for **Fire Alarm**:

- 1) This Subcontractor is to provide a complete and operable, fully tested and NFPA compliant Fire Alarm System per the Contract Documents and as required by all applicable codes.
- 2) Included is all conduit, wire, terminal cabinets, devices, grounding, surge arrestors, batteries, control panels, remote panels, etc.
- 3) This Subcontractor shall "bag" all fire alarm devices from installation through of final NFPA inspection/verification by Engineer of Record in each building to protect devices from surrounding construction elements including dust, etc. Factory dust covers are not acceptable means of protection. Any

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soiled heads at time of Owner Acceptance through sensitivity report shall be replaced by this Subcontractor at no cost. Delaying installation of devices due to current construction status of building is not acceptable since fire alarm system will proceed under all circumstances to meet inspection dates.

- 4) Owner warranty full NFPA 72 test is included as specified to verify system operation and replace defective devices.
- 5) For any Fire Alarm work, the Electrical Contractor shall employ a full time on-site supervisor during fire alarm conduit installations, fire alarm wire pulling, device installation, testing, and state approvals who is well versed in fire alarm installations and sequencing. This Subcontractor's lower tier subcontractor providing the fire alarm devices and programming shall have a full time certified engineer/programmer well versed in the fire alarm program from time of down load until system is approved by the State for:
 - a) Extended hours due to lack of systems being ready will be responsibility of this Subcontractor to reimburse the PE for management, and other Subcontractors working to pass the systems.
 - b) The fire alarm system must be completely tested by this Subcontractor and NFPA 72 form completed 100% with sensitivity reports and maps installed (test #1) prior to PE approving the system (full test #2). After test #2 passes, the PE will invite the Engineer of Record to Test the system (test #3) and if it passes, we will invite CPSS Electronics shop to test the system (test #4), at which time the State Construction final inspection will follow (test #5). This Subcontractor is responsible from providing all testing devices (ladders, commercial grade smoke makers, smoke bombs, etc.).
 - c) Completion of all systems, testing, documenting all forms and certifications, Owner and Architect inspections, and DOI inspections shall be completed forty- five (45) days prior to scheduled project completion date to allow Owner to occupy building to installed Owner furnished materials.
 - d) A Fire Alarm checklist will be provided by PE. Included herein is the completion of this checklist prior to SCO/Project Expeditor inspections.
 - e) All required relays, wiring, conduit, etc. are included to interface fire alarm system with mechanical system, dampers.
 - f) Final connection to fire protection tamper switches, flow switches, PIV's etc. are herein included.
 - g) All junction boxes shall be marked and labeled per specs.
- 6) This Subcontractor's lower tier Subcontractor providing the fire alarm devices and programming shall have a full time certified engineer/programmer well versed in the fire alarm program from time of down load until system is approved by the State.
- 7) Wiring to mechanical VFD's, etc. by this Subcontractor is herein included.
- 8) Wiring to mechanical BMS controllers/computers is herein included.
- 9) This Subcontractor shall coordinate with the HVAC Contractor for installation of duct mounted smoke detectors. This Subcontractor is responsible for furnishing, monitoring, and powering all duct mounted smoke detectors. This Subcontractor is responsible for furnishing and complete turnover to HVAC Contractor all duct mounted smoke detector installation into ductwork locations must be coordinated by location for optimal performance.

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- 10) Subcontractor shall include tie-in and monitoring of the emergency eye wash's and showers to the fire alarm system as required by the contract document's.
- 11) Subcontractor shall include all signage, labeling, and tagging of fire alarm components as required.

The following items are a general scope listing for work to be included in this agreement for **Security / Access Control:**

- 1) Subcontractor shall provide and install all security and access control related items as detailed in the contract documents.
- 2) Any and all conduit, wire, j-boxes, etc. as indicated in the Contract Documents are herein included.
- 3) All door access control raceway for a complete system.
- 4) Provide all conduit, boxes, connectors, bushings, etc. for raceway system complete per Contract Documents
- 5) Provide all grounding requirements
- 6) Provide all power requirements
- 7) Installation and termination of low voltage wiring for access controls systems is included.
- 8) Coordination with the University lock shop requirements and integration with the access card reader Open Option system is included.
 - a) Provide, mount, and wire all open option panels and control boxes.
 - b) Any required power supplies are included.
 - c) Provide and install all card readers.
 - d) Provide and install all door prop alarms.
- 9) Power door operators and electrified door hardware will be provided and installed by the door hardware subcontractor. Final connection of wiring from access controls systems to hardware and operators is by this subcontractor.
- 10) All required conduits and raceways are by this subcontractor. All required power is by this Subcontractor. Low voltage wiring is by this Subcontractor.
- 11) Provide and install building security systems as detailed in contract document's.
- 12) Provide and install knox boxes as shown in the drawings.
 - a) Coordination of knox box tie-in to security system is included.
- 13) Provide and install BD 2-way radio system as detailed in the contract documents.

The following items are a general scope listing for work to be included in this agreement for **Earthwork (As Applicable)**

- 1) This Subcontractor assumes the liability associated with sediment entering the storm sewer system or discharging off-site, and will immediately rectify all unacceptable conditions.
- 2) This Subcontractor is responsible for the re-wetting, aeration, and/or drying of existing soil materials to obtain optimum moisture content for use as compacted fill. In the event weather conditions do not allow Subcontractor to dry wet materials required to perform the work within the scheduled time frame,

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Subcontractor shall remove and dispose of the wet material and replace with suitable soil as not to delay project schedule at no additional cost to CM@R.

- 3) This Subcontractor is responsible for dewatering. Dewatering is considered all-natural grade water as well as "surface or rain water" for all excavations under this agreement. Dewatering includes all required pumps, sumps, stone, etc. for proper execution of work under this agreement and for the continual maintenance of exposed soil conditions to access the work under this agreement.
 - a) This Subcontractor shall maintain a suitable soil substrate condition once exposed under this agreement. The Owner (or the CM@R) will not be responsible to reimburse Subcontractor for the costs to remove unsuitable soil and dispose of off-site or for the replacement costs of suitable fill (or stone backfill) for exposed substrate conditions not achieving compactions due to excessive moisture content not inherent with undisturbed soil conditions on-site.
- 4) All excavated/graded spoils generated under this agreement shall be hauled offsite and disposed of accordingly by this Subcontractor.
- 5) This Subcontractor is responsible for trench and excavation safety including sheet, shoring, trench boxes, etc.
- 6) This Subcontractor is responsible to for providing, installing, maintaining, and removing excavation safety barricades, perimeter fencing, flagging, etc.
- 7) This Subcontractor shall provide all ladders and access/egress points
- 8) This Subcontractor shall provide all air quality monitoring in excavations
- 9) Excavations shall not be left exposed during non-working hours. Each day's work shall be backfilled to afford other trades work accessibility on and around the site.
- 10) This Subcontractor is responsible for all spoils removal, to provide suitable backfill, backfill, and compact the soils for the execution of all underground electrical scope of work.
- 11) This Subcontractor will provide for all applicable areas on site: Sheeting, shoring, supporting for a safe work area.

Subcontractor is responsible for Line-Load wiring requirements as detailed below and in the contract documents and specifications.

- 1) This Subcontractor is responsible for reviewing Mechanical documents for specified power requirements and conditions for mechanical equipment including responsibility for furnishing and mounting disconnects, furnishing and mounting motor starters, furnishing and mounting variable frequency drives, etc. This Subcontractor is responsible for completing all power and control wiring not indicated by Division 23 to provide a complete system.
- 2) Specific work to be done under Division 26 is hereinafter listed or described. All other work necessary for the operation of Divisions 22 and 23 equipment shall be performed under those Divisions.
- All individual motor starters and drives for mechanical equipment (fans, pumps, etc.) shall be furnished and installed under Division 23 unless indicated as a part of a motor control center. Motor starters for mechanical equipment provided in motor control centers shall be furnished under Division 26.

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- 4) Under Division 26, power wiring shall be provided up to a termination point consisting of a junction box, trough, starter, VFD or disconnect switch. Under Division 26, line side terminations shall be provided. Wiring from the termination point to the mechanical equipment, including final connections, shall be provided under Divisions 22 and 23.
- 5) Duct smoke detectors, if required by NCBC, shall be furnished and wired by Division 28, installed by Division 23. Fire alarm AHU shut down defeat switch shall be inside or immediately beside the fire alarm panel. The shutdown defeat circuit shall be wired from the fire alarm control panel to a termination point, adjacent to the AHU control, under Division 28. AHU control wiring from the termination point to the equipment shall be under Division 23
- 6) Equipment less than 120 Volt, all relays, actuators, timers, seven-day clocks, alternators, pressure, vacuum, float, flow, pneumatic-electric, and electric-pneumatic switches, aqua-stats, freeze-stats, line and low voltage thermostats, thermals, remote selector switches, remote pushbutton stations, emergency break-glass stations, interlocking, disconnect switches beyond termination point, and other appurtenances inclusive of control system power supplies associated with equipment under Division 23 shall be furnished, installed and wired under Division 23.
- 7) All wiring required for controls and instrumentation not indicated on the drawings shall be furnished and installed by Divisions 22 and 23. 7. Equipment with built-in disconnects or outlets provided under Divisions 22 or 23 shall be wired under Division 26 to the line side of the disconnect switch, or the outlet. A disconnect switch shall be provided under Division 26 if the equipment is not provided with a built-in disconnect switch. In this case wiring from the switch to the equipment shall be under Divisions 22 or 23. The built-in switch for outdoor equipment shall be in minimum NEMA 3R enclosure.
- 8) The sequence of control for all equipment shall be as indicated on the Division 23 Drawings and specified in Section 23, HVAC Control System.
- 9) Horsepower for all motors shall be consistently identified on the Division 23 and Division 26 Drawings.
- 10) Under Division 23, the cable from the load side of the VFD to the driven equipment shall comply with the equipment manufacturer's recommendations.
- 11) All sprinkler flow and tamper switches shall be furnished and installed under Division 21, and wired under Division 28.
- 12) Where electrical wiring is required by trades other than covered by Division 26, specifications for that section shall refer to same wiring materials and methods as specified under Division 26. Exception to that is the low-voltage control wiring; the use of the J-Hooks to support the low-voltage control wiring system is acceptable; as outlined in Section 4 of the Telecom STS -1000 Guidelines.
- 13) For kitchen equipment, Division 26 Contractor shall install wiring from a power source to a termination point, adjacent to the kitchen equipment. Contractor providing kitchen equipment shall wire to the equipment from the termination point.
- 14) The use of combination starters is recommended over the use of individual starters and disconnect switches. Unless confirmed otherwise with the Mechanical Designer, typical pump and fan applications have variable load profiles where the use of VFD for pump and fan motors five HP and larger is recommended. For non-

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VFD driven motor applications rated 100 HP or higher, solid-state reduced voltage starting shall be required to reduce voltage drop during motor starting.

- 15) A diagram clarifying division of work responsibility to provide and install the termination point, such as (trough, VFD, individual starter, disconnect switch, JB, --- etc.) shall be as detailed on the drawings.
- 16) Disconnects for the elevator and the elevator's car shall be provided and installed by the Electrical Contractor.
- 17) Reports showing the sizes of the maximum overcurrent protection (MOCP), minimum circuit ampacity (MCA), and overload setting of the devices for all motors; shall be provided by the Contractor providing the equipment to the Electrical Contractor for incorporation into the Electrical Systems Studies to be submitted to the Electrical Engineer for review and approval prior to purchase or installation of any electrical equipment.
- 18) All electrical work shall be performed by individuals and/or companies who are properly licensed by the NC State Board of Examiners of Electrical Contractors.

The following items are a general scope listing for work to be included in this agreement for BIM / ILM (Integrated Life Cycle Management):

- 1) This scope of work includes BIM / ILM coordination and execution for the UNC Charlotte Science Building Project. This Subcontractor is responsible for full adherence to the approved BIM / ILM execution plan as outlined in the Bid Manual.
- 2) This Subcontractor will be responsible for full participation in the BIM coordination and ILM efforts with all other applicable subcontractors. Reference the BIM / ILM plan included within the Bid Manual.

Alternates:

- Alt. #1: _____
- Alt. #2:
- Alt. #3: _____ _
- Alt. #4: _____ _
- Alt. #6: _____
- Alt. #8a: _
- Alt. #9: -
- Alt. #11:
- Alt. #13: _____ _
- _
- Alt. #17: ______ (Add. #2)

Arch. Unit Prices

- AUP-07:
- AUP-08:

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BID PACKAGES SCOPES OF WORK REVISION #1: 5/10/19 REVISION #2: 5/16/19 REVISION #3: 5/23/19

- AUP-09: _____ -
- AUP-10:
- AUP-11: _____ AUP-12: _____
- AUP-13: _____

CM Unit Prices

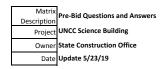
- CMUP-05: _____
- CMUP-06: _____
- **CMUP-07:** -

Allowances (reference bid form attachment 04)

- Allow. #04
- Allow, #05
- Allow, #06
- Allow. #07
- Allow. #08 _
- Allow. #09
- Allow, #10

Trade Specific Scope of Work Exclusions: -NONE

End of Document



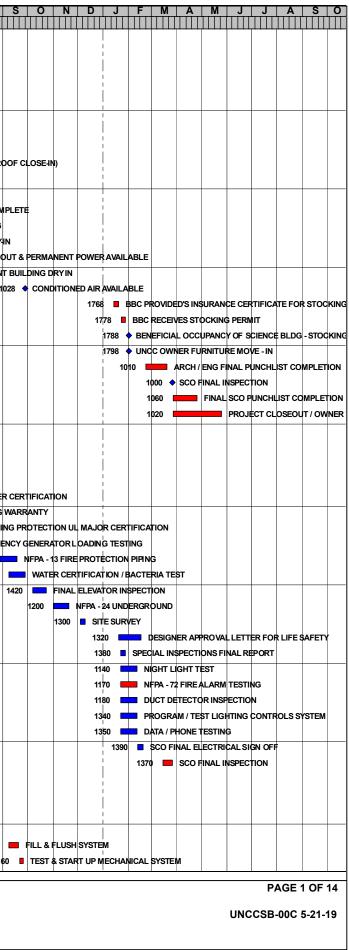
# Addendum	Page	DISCPLINE	Bidder Questions/Comments	Item By	Date	Response	Response	Date
			Addendum #1	include by	June		by:	
1a Addendum #1		BP-023A	Duct Cleaning - 233113, 3.12, C states to clean duct systems that do not pass visual or random testing. Who would be doing the inspection?	Subcontractor	5/2/2019	The Owner's Project Manager, Commissioning Agent, Engineering Design Professional will conduct random visual inspections. The contractor will perform the vacuum tests in random locations selected by the Engineering Design Professional as stated in section 233113, Article 3.12.8.2	Arch.	5/8/2019
1b Addendum #1		BP-023A	Duct Cleaning - Can you create an allowance for all contractors to carry for Duct Cleaning? We would do our best to keep inside of ducts clean via plastic wrapped ends and not using returns during temp HVAC via permanent heating system, but In a project like this, this spec is so vague, that the owner could have the contractor "Clean" the whole system and that would be hundreds of thousands of dollars.	Subcontractor	5/2/2019	There is nothing vague in the requirements of the specifications. Duct cleaning is only required if the visual inspections or vacuum test referenced in the specifications results in a "fail". To be clear; there is no requirement to clean the ductwork if the visual inspections and the vacuum testing referenced in the specifications results in a "pass". However, we have been on projects wherein the ductwork was not properly protected during fabrication, shipping, job-site storage and installation resulting in significant levels of debris within the duct system resulting in a "fail" on the visual inspections and/or random vacuum test referenced in the specifications. We would expect the contractor to perform at a high level to keep the ductwork systems clean. Section 233113, Article 3.12 gives the Owner remedy in the case the contractor performs inadequately to maintain duct cleanliness. Whether or not to carry any costs to clean the duct sentirely based on the contractor's risk tolerance. If his duct system installations pass the visual inspections and vest referenced in the specifications then cleaning will not be needed and he would not realize any costs associated with duct cleaning. On the other hand if the contractor is not diligent during the construction process, the installation may not pass the visual inspections or vacuum test resulting in the need to clean the duct system at some cost to the contractor.	Arch.	5/8/2019
						Whether or not the duct systems are properly installed resulting in a pass or fail on the visual inspections or the vacuum test is entirely in the hands of the contractor. If, during the random inspections and tests noted in the specifications, a duct does not pass, the entire system to which the failed duct is connected shall be cleaned.		
2 Addendum #1		BP-023A	Subcontract Special Conditions – all Submittals required within 21 days of post bid meeting. This is unrealistic for the HVAC package. We typically can't get controls submittals for months. What happens when we can't get submittals in less than 21 days?	Subcontractor	5/2/2019	It is understood that some submittals take more than 21-days to generate. The expectation is that product data submittals for long lead items that will impact the critical path of the schedule will be prioritzed and submitted within 21 days. Balfour will coordinate these submittal items with the low bidder and provide a submittal schedule at the post-bid meeting, the purpose of this schedule is provide a list of high priority, critical path submittals for the subcontractor to focus on directly after bid opening. Submittals which take more than 21-days to generate by the subcontractor are expected to be provided as quickly as possible after the critical path material / equipment submittals are provided.	ввс	5/2/2019
3 Addendum #1		BP-023A	Is there a drawing or description of what "mock-up" will include?	Subcontractor	5/2/2019	Mock-ups are to be included as shown in the drawings or called for within each individual spec. section. If mock-ups are not shown in the drawings, or detailed within individual spec. sections, then they will not be required for that particular spec. section.	BBC	5/2/2019
4 Addendum #1		BP-023A	Can you clarify who would be considered a "Full-Time Commissioning Manager"? Are you going to require resumes for personnel we use?	Subcontractor	5/2/2019	The expectation is that there will be a person provided by the subcontractor with adequate knowledge and expertise dedicated specifically to the Commissioning process to ensure proper coordination, execution and implementation of the Commissioning plan provided by the subcontractor that has been approved by the Commissioning Agent. We would expect the person assigned to this role to be a subject matter expert with respect to the scope of work being commissioned and able to make decisions regarding the commissioning process. The CM@R will need to review this persons credentials prior to the start of the commissioning process.	BBC	5/2/2019
5 Addendum #1		BP-023A	Subcontract Special conditions Item 64 says Trades requiring concrete pads to provide their own. BP-23A says Concrete package to provide concrete pads. Please Clarify.	Subcontractor	5/2/2019	If concrete curbs and pads are shown on the architectural or structural drawings, they will be provided & installed by the concrete subcontractor, however, it will be the responsibility of each trade utilizing the pad to size it and properly locate it and lay it out. If there are curbs or pads that are required but not shown, then it will be the responsibility of the trade needing the pad or curb to provide and install them.	BBC	5/2/2019
6 Addendum #1		BP-023A	Under Temporary Utilities, we are to maintain 60 degrees. Is it your intention for us to provide this only after Dry in? But before Permanent system is available?	Subcontractor	5/2/2019	The intention is for temporary heating/cooling to be provided by this trade utilizing the permanent building systems, once the systems are at a point where they can be utilized for temp. use and the building is in a condition suitable for the temp use of these systems. However, if any additional temp. heating or cooling is required prior to utilization of the building systems for the installation of any items under this scope of work, it should be included as part of this scope.	BBC	5/2/2019
7 Addendum #1		BP-023A	Page 13 of BP-23A, in regards to tying into underground piping. Drawing C-420 of EP-2 shows current RUP contractor installing piping into Science building Footprint. Are they bringing piping up to 1' AFF?	Subcontractor	5/2/2019	The Mechanical underground piping will be brought into the building by the EP2 contractor and turned-up one foot AFF and capped. Scope language will be revised for BP-23A	BBC	5/2/2019
8 Addendum #1		BP-023A	Will all HW and CW piping systems installed by EP-2 contractor be flushed and chemically treated by said contractor prior to Science building contractor connecting to UG piping?	Subcontractor	5/2/2019	The piping installed by the EP-2 contractor will be flushed and treated by said contractor. The phase 3 contractor will be responsible for flushing and treating all Science Building Piping as well as any EP-2 piping that is contaminated by the installation/ tie-in of the Science Building system.	BBC	5/2/2019
9 Addendum #1		BP-023A	Page 15, item 26 of BP-23A, Will contractor warehouse be sufficient to store Owner furnished materials?	Subcontractor	5/2/2019	There should be no need to store the owner provided equipment offsite. It will be coordinated between the subcontractor, CM@R and Owner to have owner furnished equipment delivered directly to the jobsite when it is ready for installation.	ввс	5/2/2019
10 Addendum #1		BP-023A	Page 17 of BP-23A, it appears that items 1 and 4 are Plumbing related. Can you remove from scope?	Subcontractor	5/2/2019	Item #1 is referring to any sediment that enters the site storm sewer systems as a result of work installed by this scope. This requirement is to remain. Item #4 will be removed an updated in the revised scope for BP-23A	BBC	5/2/2019
11 Addendum #1		BP-023A	Alternate 12 is for Division 23 specified Hydronic Piping in lieu of Base Bid Mechanical Joints in exposed areas. Please provide Mechanical Joint Specifications.	Subcontractor	5/2/2019	Drawing H0.03 will be updated to describe the base bid requirements for mechanical joints on steel and copper piping.	Arch.	5/6/2019
12 Addendum #1		BP-023A	Spec section 230900, 3.3 A says Controls contractor is to Provide Raceways. BP-23A, page 15, item 2 under HVAC controls says Raceways provided by Electrical Contractor.	Subcontractor	5/2/2019	All raceway and conduit for controls wiring is to be provided and installed by Division 26. Division 23 is responsible for coordination of routing and locations with Division 26.	BBC	5/3/2019
13 Addendum #1		BP-023A	The spec section for Instrumentation and Control for HVAC is listed as 250000 in the spec. index. The specification itself in the specs is listed as 230900. Please advise which spec. number is the correct spec. number.	Subcontractor	5/2/2019	The correct specification section number is 250000. All references to section 230900 shall be removed or revised to read 250000. Corrected specification sections will be submitted under Addendum 1.	Arch.	5/8/2019

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14	4 Addendum #1	BP-023A	BP-23 page 14 item 14, b says to carry 5% of insulation price as allowance. Then unused amount will be deduct change order. How can you ask for an unused amount of an allowance when you don't know the actual cost of the Insulation portion of work? Can you recommend an amount to be carried for this allowance? Or put a line item on the bid form for allowance we carried?	Subcontractor	5/2/2019	The allowance is to be 5% of the value of cost for insulation included in the subcontractors bid. This number will be broken out in the subcontractor's approved SOV as a separate line item and tracked as it is used. Any unused portion will not be deducted until the end of the project after all punch is signed-off.	BBC	5/3/2019
15	5 Addendum #1	BP-023A	Specification section 230700, HVAC Insulation, calls for PVC jacketing for exposed piping 10' AFF and below. In referencing this specification as well as specification section 223553, we are unable to locate any requirements for color coding of the PVC jacketing. However, it is our understanding that color coding of PVC jacketing is a requirement of the University design and construction manual. The painting specification calls for painting of un-insulated piping and piping with "all service jackets" paintable jackets, but does not mention PVC jackets which typically do not paint well. Please confirm if piping to receive PVC jacketing is to be color coded, if so, please provide an updated specification section detailing the colors and requirements.	Subcontractor	5/2/2019	Specification section 220553, 220719, 230553, and 230700 will be revised to include appropriate UNCC standards for pipe jacketing colors.	Arch.	5/8/2019
16	6 Addendum #1	BP-32B	Can you confirm which scope is responsible for providing and placing the topsoil per the spec. section 329210, Part 2.04 Soils.	Subcontractor	5/3/2019	Bid Package 32B - Landscaping-Irrigation is responsible for topsoil importation/amendment as detailed in the plans and specifications. See revised scope BP-32B for additional detail.	BBC	5/3/2019
17	7 Addendum #1	BP-08B	Spec. 084413 3.4 B.1 states that water spray testing is required at areas designated by the architect. Please provide details on the frequency/quantity of testing required so it can be properly included in the bidders numbers.	Subcontractor	5/6/2019	Testing shall comply with AAMA 501.2 as identified in the specifications as well as the requirements outlined in 072700. Testing shall include at a minimum the head, sill, jamb, floor mullion condition, typical vertical mullion, mullion cap penetrations and custom cap profile mullions of the curtain wall assembly. Testing shall include at least one of each of the following types of curtain wall: CW-01, CW-03, CW06, CW-07, CW-11, CW-12, CW-13, CW-15.	Arch.	5/8/2019
18	3 Addendum #1	Multiple	The Building Envelop Commissioning plan/spec section 019100 lists the testing requirements for the various envelope spec. sections that need testing. Based on the language in the spec, is appears that testing is only required on the mock-up of each spec section listed. A final building envelope test is required once the entire building envelope is complete, however, it does not appear that any other testing is required after the initial mock-up testing. Please confirm if this is correct. If not, please provide clarification on the testing requirements and frequency of testing of building envelope components.	Subcontractor	5/6/2019	No, additional testing will be required after mockup testing. The building will be tested per specs 072700 and 084413.	Arch.	5/8/2019
19	9 Addendum #1	BP-26A	One of the potential bidders noted a section from the North Carolina Science Lab Checklist that for High Schools and Middle schools that requires a single emergency shut-off in each lab that will close valves in the gas, water, and shut power out servicing emergency eye wash stations, fume hoods, or lighting. This project is obviously not a high school or middle school but the question has been asked if there is any similar requirement or college laboratories for a single emergency shut-off in each lab space.	Subcontractor	5/7/2019	UNCC has stated emergency power shutoffs (EPO) are not utilized in other campus buildings and NC State Construction Office has not indicated the design is deficient due to the lack of EPOs. The Electrical Design Professional is unaware of any requirement for EPOs for this building as the relevant standards, guidelines, and policies do not contain such requirements.	Arch.	5/8/2019
20) Addendum #1	BP-23A	In the newly released contract documentation for the UNCC Science building under the Bid Manuel – Tab M Supplemental Info– EP-2 Drawings & Specifications. The specification call for the Acoustical ceilings to be Armstrong brand while the science building specifies Rockfon. Should we keep this as a single source responsibility and use Rockfon in the EP-2 Building. The advantage of Rockfon is that it can be installed without the heat or air on and it will not sag.	Subcontractor	5/8/2019	Please provide pricing per the supplemental information. The Armstrong ceiling is specific to the data center requirements.	Arch.	
21	1 Addendum #1	BP-05A	Is it the intent of the CM@R to provide no access for the project duration?	Subcontractor	5/8/2019	Access on to the site is provided by the CM@R. There are two main vehicle entrances with tire wash stations provided by the CM@R. Please reference the special provisions item #42 for a list of the temporary construction facilities and utilities items that subcontractors are responsible for providing in addition to what is called for in each individual scope of work. Per item #11 on this list, all access roads to work areas and crane pads are the responsibility of each subcontractor to provide and maintain.	BBC	5/9/2019
22	2 Addendum #1	BP-05A	Is it the intent of the CM@R to provide no lay-down area project duration?	Subcontractor	5/8/2019	The site is a very crowded and tight sight with very little to no laydown available. On-site storage of materials and equipment will not be allowed except as specifically approved by CM@R's Project Superintendent or Project Manager. Unless specifically approved in writing, Subcontractor shall not assume any space is available for on-site storage. Approval by CM@R of material storage locations shall only be construed by Subcontractor as temporary and for a limited time duration. CM@R will not allow Subcontractor to procure "bulk deliveries" for Subcontractor convenience or for manufacturer purchase agreements. Each delivery of material shall only be approved for those materials of immediate or near future installations. Subcontractor has included in his subcontract price all off-site and phased storage as may be required. In addition to article 4.6 of the Standard Form Agreement, CM@R will not be responsible for relocation costs of stored materials on-site since utilization of on-site storage for convenience is at Subcontractor's risk.	BBC	5/9/2019
23	3 Addendum #1	BP-05A	Will other trades be prevented from using or accessing crane, access, and laydown areas provided by steel subcontractors so as to prevent them from damage that arise from their use?	Subcontractor	5/8/2019	All trades will coordinate with each other in the daily foreman meetings regarding which areas are restricted for access during various construction activities to ensure safe and efficient construction can take place. Subcontractors are expected to work and coordinate with each other on a daily basis to ensure work in all areas is coordinated to ensure each subcontractor can work as safely and efficiently as possible with minimal disruptions to their work area.	ввс	5/9/2019
24	4 Addendum #1	BP-05A	What is the steel contractor responsible for providing with regards to grading, access, and gravel for access around the building.	Subcontractor	5/8/2019	Per item 7.a&b in the Steel Scope of Work, a. Any ground/pad prep required for cranes being utilized for the completion of this scope of work are included in this scope, and the Subcontractor is responsible for installing and maintaining adequate travel roads/paths from the main jobsite entrances to the steel unloading areas and crane areas for the duration of the completion of this scope. Any equipment and materials required for the installation and maintenance of these vehicle travel paths is included. When Phase 3 subcontractors arrive to start work, the site will be graded in Phase 2 according to the grading plan C-600 in the EP2 RUP drawings which can be found in the supplemental docs. section of the bid manual.	BBC	5/9/2019
			Addendum #2					
25	5 Addendum #2	BP-03A	Corrosion inhibitor is listed in the 033000 specs- please verify if this is required and for which mixes/ conditions.	Subcontractor	5/13/2019	No mix designs presently in the Science Building require corrosion inhibitor. Refer also to Civil drawings.	Arch.	5/16/2019
26	õ Addendum #2	BP-03A	Epoxy coated rebar and galvanized wire mesh are listed in 033000 specs- please verify if either of these apply to this project and where this may be required.	Subcontractor	5/13/2019	Neither galvanized wire mesh nor epoxy-coated reinforcing bars are indicated at any location within the Science Building. If such products are used in exterior elements, refer to Civil documentation or to indicated requirements in details.	Arch.	5/16/2019
27	7 Addendum #2	BP-03A	Please provide CIP wall types area A along 1 line and 2 line between A and F at <-6'-4"> footings (reference C2/SB301). Also please provide elevation for brick shelf as required here.	Subcontractor	5/13/2019	The requested information has been added to a revised SB101 and a schedule for building concrete walls that do not retain earth has been added to SB503. Top of shelf is indicated [-2'-0"] on SB101. Refer to Addendum #2 drawings.	Arch.	5/15/2019
28	3 Addendum #2	BP-03A	What CIP wall type(s) applies to 8" CIP along A line between 2 and 2.4. Detail A2/SB301 does not indicate rebar and states max wall height that does not work with all top of footings here. Also, reference A1&A2/SB504.	Subcontractor	5/13/2019	The detail A2/SB301 is modified in a revised drawing to remove the height limit. Wall type is indicated (CW-1) and reference made to a Building Concrete Wall schedule on SB503. Refer to Addendum #2 drawings.	Arch.	5/15/2019
29	9 Addendum #2	BP-03A	Along 2 line at A, A.3, E, & F, there are two footing designations- please confirm what should be used CF7.0 or F19.0 x 7.0 or what intent is having two footing types here.	Subcontractor	5/13/2019	At each of the two referenced locations, the footing design is updated as follows: Footing is F20.0x7.0, 20'-0" x 7'-0" x 1'8" thick. Reinforcing is updated as indicated in revised drawings (SB502). See Addendum #2 drawings.	Arch.	5/15/2019
30) Addendum #2	BP-03A	Please verify which structural details are to be used for cast in place concrete indicated on the Civil drawings. 5/C-510 shows an 8" CIP wall with brick ledge at stair cheek walls. What structural section should be used for this footing and wall?	Subcontractor	5/13/2019	Typical Site wall section on sheet SB501 applies to the walls beside site stairs.	Arch.	5/16/2019
31	L Addendum #2	BP-03A	Please verify which structural details are to be used for cast in place concrete indicated on the Civil drawings. 8/C-512 shows a 1'-8" cast in place wall with brick ledges. SB501 Typical Site Wall Section appears to be the appropriate detail for the seat walls on level grade, but this shows CMU in lieu of a cast in place wall. Please advise what structural detail should be used for these seat walls and whether these will be CMU or cast in place walls behind veneer.	Subcontractor	5/13/2019	Typical Site wall section on sheet SB501 must be used to construct the wall shown in detail 8 on civil sheet C-512. Interior (structural) portion of wall is shown as reinforced masonry.	Arch.	5/16/2019
32	2 Addendum #2	BP-03A	Please verify which structural details are to be used for cast in place concrete indicated on the Civil drawings. Please provide top of wall elevation for the site retaining wall near the loading dock on C-502. Verify we should use detail "Site Retaining Wall" on SB503 and that this will be 12" thick exposed concrete with no veneer or other finish.	Subcontractor	5/13/2019	Site Retaining Wall Detail on sheet SB503 must be used to construct the CIP retaining wall near the loading dock. Detail has been modified to include cast stone cap and veneer. Concrete is not exposed. Refer to Addendum #2, sheet SB503.	Arch.	5/16/2019
33	3 Addendum #2	 BP-03A	What is top of pier at L/8? Is this 1'-4" below level 0 finished floor?	Subcontractor	5/13/2019	The correct top of pier elevation at L-8 is [-15'-10"], which is 1'-0" below Level 0 finished floor. Top of footing elevation at this location is [-19'-2"]. Refer to SB101 on Addendum #2 drawings.	Arch.	5/15/2019
34	1 Addendum #2	BP-03A	What is the required depth of depression in the slab on grade for alternate 6 to accommodate raised access flooring?	Subcontractor	5/13/2019	Depression is 8" to accommodate electrical floor boxes. Refer to Addendum #2, S-003 and SB502.	Arch.	5/16/2019
35	5 Addendum #2	 BP-03A	Verify diaphragm reinforcing bar size and quantity at level 2 and 3 per Framing note 6 on SF102 and SF103. Level 1 indicates (4) #7 per Key Note 4 on SF101. Level 4 is (4) #5 per key note 6 which is pointing at dashed line per Framing Note 7 on SF104.	Subcontractor	5/13/2019	Size and Quantity have been added to SF103 using keynotes. Refer to Addendum #2 drawings.	Arch.	5/15/2019
36	5 Addendum #2	BP-03A	Verify height of concrete curbs at level 4- structural detail on SF502 and 41/A7.13 both indicate 6"x 6". D4/A8.22 shows 6" x 1'-6" high curb. Please verify if any other level 4 curbs require water stop as indicated in 32/A7.05.	Subcontractor	5/13/2019	Curbs on level 4 do not require water stop. Locations of 18" tall curbs have been indicated on SF104 and a typical detail added to SF502. Refer to Addendum #2 drawings.	Arch.	5/15/2019

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Addendum #2	BP-03A	Verify the following are the only site/ Civil concrete items to be provided by BP03A: site stairs per 4&5/C-510, seat walls per 8/C-510, retaining wall near the loading dock on C-502, and the dock pit footing on C-411.	Subcontractor	5/13/2019	Per items 4, 5, 7, & 9 on page 6 of the BP-03A scope of work, site stairs, seat walls, retaining walls, and the loading dock lift pit footings are included in the BP-03A scope of work.	BBC	5/14/2019
Addendum #2	BP-03A	Verify the following site concrete items are not by BP03A: Concrete pavement, bollards, and 4" recessed can wash in loading dock area	Subcontractor	5/13/2019	Concrete pavement, bollard installation, and the 4" recessed can wash are not part of BP-03A.	ввс	5/14/2019
Addendum #2	BP-03A	Verify the following site concrete items are not by BP03A: Details 1 & 2 A8.20- show concrete below pavers where they intersect the building- assume by Paver sub.	Subcontractor	5/13/2019	Per item #6 on page 6 of the revised scope BP-03A dated 5/10/19 issued in addendum #1, these items are part of the BP-03A scope of work.	BBC	5/14/2019
Addendum #2	BP-03A	Verify the following site concrete items are not by BP03A: Any concrete for light poles, light bollards, or blue phones.	Subcontractor	5/13/2019	Concrete for light poles, light bollards, and blue light phones will be part of the electrical scope of work BP-26A.	BBC	5/14/2019
Addendum #2	BP-03A	Verify the following site concrete items are not by BP03A: Footings for any site railings at ramps along paver walkways	Subcontractor	5/13/2019	Footings for site railings along paver walkways will not be part of BP-03A. They will be included as part of BP-32A.	BBC	5/14/2019
Addendum #2	BP-03A	Verify the following site concrete items are not by BP03A: Concrete banding and pavement at speed tables 6/C-510	Subcontractor	5/13/2019	Concrete Banding and paving at speed tables will are not part of BP-03A. They are included as part of BP-32A.	BBC	5/14/2019
Addendum #2	BP-03A & BP- 05A	BP03A scope states we are to include welded rebar. There is welded rebar at all levels of the elevated slabs on deck (reference sections on SF302, SF303, and SF305). Should the welding of rebar to edge of slab angles, etc. (similar to DBA's) not be by the Steel bid package? Please remove welded rebar from BP03A scope.	Subcontractor	5/13/2019	BP-03A is to provide, layout and turnover all rebar material called out to be welded to the BP-05A subcontractor for welding by BP- 05A subcontractor. Please reference updated scopes of work BP-03A and BP-05A in Addendum #2.	BBC	5/14/2019
Addendum #2	BP-03A	BP03A scope states we are to include backfilling. Please provide a more detailed explanation of the "backfilling" scope of work that is to be included by BP03A. When referencing the sitework scope from the RUP building, it appears that certain grading/ backfilling extends into the Science Building project. For example, EP-II BP31A scope of work (revision #2 dated 9/14/18) states "Subcontractor is responsible for all backfill of foundation walls, site walls, and curb and gutter for the RUP and Science Building." Please clarify which bid package is responsible for interior footprint backfilling including Level 0 footings, Level 1 mass backfill of footings and retaining walls between Level 0 and Level 1 including the entire portion of area A which is not on subgrade for level 1. Verify who is responsible for all exterior backfill of building foundations and walls outside of the building footprint to establish exterior finished grades (reference sheet C-100 and C-600).	Subcontractor	5/13/2019	03A scope of work. Backfill out side of the building foot print of the perimeter building and retaining walls is to be done by the site	BBC	5/14/2019
Addendum #2	BP-03A	BP03A scope of work states "Subcontractor to include Moisture Mitigation Admixture at all interior slabs". Please verify this is required as it appears that addressing moisture issues is covered under flooring bid packages which are instructed assume moisture tests will not pass and to use a topical application treatment per 096110 Moisture Mitigation at Slabs. If BP03A is still required to provide a moisture mitigation admixture please provide a list of acceptable products to use for this.	Subcontractor	5/13/2019	Moisture mitigation admixture will be removed from the BP-03A Scope of work. Please reference the revised BP-03 scope in Addendum #2.	BBC	5/14/2019
Addendum #2	BP-03A & BP- 05A	BP03A scope of work (pg. 10 item 10a) references installation of stair nosing's furnished by steel sub. Please clarify specific locations where this is required. Typical pan stair details on A7.05 and A7.06 do not show nosing's in concrete portion of pan stairs.	Subcontractor	5/13/2019	Please reference details 11 & 12 on sheet A7.06 and also reference response to RFI #50 below regarding the required locations of cast- in-place stair nosing's for the Science Building	BBC	5/16/2019
Addendum #2	BP-03A	Please verify that all exposed cast in place walls at level 0 are intended to receive rubbed finish regardless of room.	Subcontractor	5/13/2019	Yes, all exposed concrete walls at Level 0 should receive a rubbed finish.	Arch.	5/15/2019
Addendum #2	BP-03A	Verify BP03A is not required to provide BIM drawings for structural concrete. Verify BP03A is not required to participate in BIM meetings. It is understood that BP03A will coordinate with other trades as required to incorporate BIM coordination as if affects the concrete scope indicated in the design documents.	Subcontractor	5/13/2019	Please refer to the BIM /ILM execution plan in the bid manual for the requirements by trade for these processes. If applicable to a respective subcontractor's scope of work, please provide these costs as requested on the bid form.	BBC	5/14/2019
Addendum #2	BP-03A	Is BP03A required to provide any of the CM Unit prices in Bid Form Attachment 3? If we are asked to provide UP-06 or UP -07- What is the definition of "import/ export #ABC and #57"?	Subcontractor	5/13/2019	Please reference the end of the BP-03A scope of work for Unit Prices that are required for this scope of work. Import/Export of these items is to provide, deliver and install/spread the associated items and remove at a later date if required.	BBC	5/14/2019
Addendum #2	BP-03A & BP- 05A	Details 11 & 12 have a note that call for resilient treads and risers with an integral contrast nosing. However, in looking at the finish plans, we cannot locate where this floor finish is called for on the finish plans. Please confirm if resilient treads and risers are required at any of the stairs and if so, please provide locations. Also, please confirm if cast-in metal stair nosing's are required at any stairs. These details appear to show nosing's in cast treads but the note calls for resilient treads.	Subcontractor	5/13/2019	The resilient treads were removed from the project. All but Stair 1 should be exposed concrete stairs in metal pans with cast-in metal stair nosing's.	Arch.	5/15/2019
Addendum #7	BP-05A & All MEP	Scope item 3 under trade specific page 6 states that division 5 is responsible for cutting in the roof, floor and wall penetrations as well as installing temporary rail around the openings. Cutting of decking should be by MEP trades. We would frame out openings As shown on drawings and provide temporary cable rails in these areas, however small Penetrations and roof penetrations that are typically only reinforced underneath and not Entirely framed out should be cut by trade contractor.	Subcontractor	5/13/2019	The expectation of this item in the scope is that any holes required in the decking for the installation/completion of this scope of work will be cut and protected by BP-05A. This subcontractor will also be responsible for protection of all stair and elevator openings as detailed in the scope of work. MEP trades will be responsible for cutting their own holes in the decking as they install their items that pass through those openings/penetrations. Please reference the revised scope of work BP-05A in Addendum #2.	BBC	5/14/2019
Addendum #2	BP-05A	Please clarify the requirement to clean the structural steel after completion of installation. Would this be required if the steel is stored in a manner to keep mud and debris off the steel? steel?	Subcontractor	5/13/2019	The steel shall be clean of any dirt, debris, or contaminates in order to receive spray fireproofing or any other finish that is called for in the contract documents.	ввс	5/14/2019
Addendum #2	BP-05A	Please clarify the integrated lifetime management procedures in the BIM requirements. Would the steel contractor be responsible for attempting to update the model as pieces are fabricated in the shop? Would the steel erector be required to update each piece of steel as they erect?	Subcontractor	5/13/2019	Please refer to the BIM /ILM execution plan in the bid manual for the requirements by trade for these processes. If applicable to a respective subcontractor's scope of work, please provide these costs as requested on the bid form.	BBC	5/14/2019
Addendum #2	All Trades	Wood blocking & rated/treated wood blocking listed in scope 08BBut the drawings call it out in 06-1000 and its listed in the BP-06A Scope Sheet. Please advise who is responsible for wood blocking.	Subcontractor	5/13/2019	wood blocking are responsible for providing layout drawings to the BP-09A subcontractor showing all locations and sizes of wood blocking required. Any wood blocking that is not installed due to not being shown in the layout drawings will be the responsibility of	ввс	5/16/2019
Addendum #2	BP-08A & BP- 08B	Who provides door hardware for the doors installed under the glass & glazing bid package BP-08B?	Subcontractor	5/13/2019	Each contractor provides all door hardware for doors they provide and install. Hardware for doors provided under the BP-08B package is to be provided by the BP-08B subcontractor. Hardware for doors provided by the door subcontractor BP-08A will be provided and installed by BP-08A	BBC	5/16/2019
		Addendum #3		1		1	
Addendum #3	BP-23A	Division 250000, 2.14 Control Valves. Please confirm that PICCV energy valves are to be used for AHU coils and service entrance heat exchangers; and that conventional pressure dependent valves are approved for hot water reheat coils.	Subcontractor	5/17/2019	Confirmed.	Arch.	5/22/2019
Addendum #3	BP-23A	Drawing H0.03; Alternate No 12; A. Base Bid is the use of Mechanical Joints in accessible areas Please clarify the Definition of "Accessibility" because on Drawing H0.01 - Accessibility Footnote Item B indicates that "Accessibility" is defined as being accessed, for service, repair or replacement by "an averaged sized individual"	Subcontractor		Inaccessible locations include the use of mechanical joints behind sheetrock (or block) walls or ceilings and within areas not physically reachable for repair or observation.	Arch.	5/21/2019
Addendum #3	BP-23A	Please provide clarification on Note 31 "Provide at least three-elbow swing for pipe take-offs to terminal equipment & risers, on Drawing H0.01	Subcontractor	5/17/2019	A 3-elbow swing is standard terminology in the industry. At the branch take-off, three elbows are to be provided to allow flexibility in the system.	Arch.	5/21/2019
Addendum #3	BP-23A	Please clarify Specification Section 23 21 13-6; 3.4 B; 1 & 2 - Item # 1 & 2 basically indicates that piping less than 20 feet can be hung with clevis hangers, however # 2 indicates that any piping 20 feet & longer must be hung with roller hangers. Please clarify as this method is very expensive.	Subcontractor	5/17/2019	The preferred hanging method is as indicated in the specifications. Contractor can propose alternate hanging methods as a cost reduction measure. Design of alternate hanging methods shall be the responsibility of the contractor/subcontractor.	Arch.	5/22/2019
Addendum #3	BP-23A	Specification Section 232116 is to be used for Alternate 12, however we ask that it be looked at. 232116; 3.2 N requires all branch connections to mains using tee fittings in main pipeWe ask that this item be clarified as to the correct means & method to be in accordance with the Spec. If the mains are 8" and the branch is 1", what type tee fitting is to be used?	Subcontractor	5/20/2019	This is means and methods, however the specified manufacturers provides reducing tees applicable to this application.	Arch.	5/22/2019
Addendum #3	BP-23A	What valve spec is to be utilized for the base bid? Spec Section 230523 appears to be driven to Alternate 12, which is flanged, soldered and/ threaded valves.	Subcontractor	5/20/2019	Supplemental specification section 230523.1 will be included in Addendum #4.	Arch.	5/22/2019
Addendum #3	BP-23A	Spec Section 230523 - page 12 - indicates that the chilled water ball valves 2" and below are to be threaded; within a copper system. Can these valves be sweat? The Hot water valves on page 13 are indicated to be sweat	Subcontractor			Arch.	5/22/2019
Addendum #3	BP-23A	Drawing H0.03 indicates that the base bid piping shall be: 1. Steel pipe joints with grooved ends up to 12" 2. Copper pipe joints with pro-press ends up to 4" What is the size break? Can it be copper up to 2" and steel 2-1/2" above?	Subcontractor	5/20/2019	Yes. This can be copper pipe up to 2" and steel pipe 2-1/2" and above.	Arch.	5/22/2019
Addendum #3	BP-10A	The specification's call for 11-guage aluminum diamond plate for wall protection in multiple areas in the basement. In looking into this, the manufacturer does not make 11-guage aluminum diamond plate. Please review and advise what gauge is required.	Subcontractor		The basis of design product (Wallguard) is intended for heavy duty use and is available in .125 (11 gauge). The intent is to provide heavy-duty corner and wall protection in the high-traffic service areas of the building. A lower gauge thickness is acceptable, not less than 14 gauge.	Arch.	5/22/2019
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65 Addendum #3	BP-23A	Some of the bidders are having a hard time taking off all of the ductwork in the penthouse only being able to see it in 2D on sheets H1.40-H1.40C. Is there a way to to issue a 3D view of the ductwork in the penthouse so the bidders can clearly see where the ductwork overlaps and at what height. For instance, On H1.40A, you have 2 stacked fans. Which is up, which is down?	Subcontractor	5/21/2019	3D view will be added to the drawings in addendum #4.	Arch.	5/22/2019
66 Addendum #3	BP-23A	With regards to the plenum wall that is to be installed on the concrete curb in the penthouse, There are limited details and sections (4/A3.20, 2/A8.22 & 33/A9.20) that show how this is to be constructed. Additional section and details have been requested to help ensure the bidders pick take this area off correctly. Please provide additional details and sections at both the sill/curb as well as the head of the plenum wall to help the bidders understand the intent of the plenum wall.	Subcontractor	5/21/2019	Detail A on sheet H5.02 shows connection detail at the sill/curb and the head of the plenum. Refer to spec section 233113 - 2.5 "double wall plenums and connections to louvers" for construction.	Arch.	5/22/2019
67 Addendum #3	BP-12B	Are the 1011M4 unframed marker board panels supposed to be ceramic steel or should they be glass? The specs mention in the same line (2.1B) both dry erase (ceramic steel) and glass. This could be a huge misunderstanding in price.	Subcontractor	5/21/2019	To clarify, the specifications indicate that framed marker boards are to be ceramic steel panel with aluminum frames, and unframed marker boards are to be glass.	Arch.	5/22/2019
8 Addendum #3	BP-10A & BP- 12B	BBCC Bid Package 12B Scopes of Work Primary Specification Sections includes 104000 Safety Specialties (First Aid, Defibrillator, etc.); however, this section is already included in BP Pkg 10A. Please confirm 104000 is in BP12A and not BP12B.	Subcontractor	5/21/2019	Bid Package 12B is to include safety specialties items that are installed within the safety station panels which are provided iby Bid Package BP-12B. BP-10 is to provide and install all safety specialties items that are called for outside of the safety station panels.	ввс	5/22/2019
9 Addendum #3	BP-12B	BBCC BP 12B Scopes of work Trade Specific Scope Items #3xii-xiii (page 7) notes electrical service fittings are included with ceiling service panels; however, electrical specification includes receptacles. Please confirm receptacles in the Ceiling Service Panels are included in BP 12B as written.	Subcontractor	5/21/2019	Confirmed, all devices including receptacles that are installed within the ceiling service panels are provided by BP-12B. Rough-in and final connection will be by the associated MEP trade.	BBC	5/22/2019
) Addendum #3	BP-12B	115313 2.6 K.1 notes airfoil as stainless steel with polytetrafluorethylene or polyvinylidene fluoride or painted steel to match hood exterior. To be clear, please confirm painted steel to match hood exterior is acceptable for the airfoil.	Subcontractor	5/21/2019	Yes, that is the design intent. The airfoil finish must match the finish on the fume hood exterior.	Arch.	5/22/2019
L Addendum #3	BP-12B	115313 2.9 Accessories A, B, C, D note airflow monitoring and alarm sensors; however, section 230995 details the [Phoenix] control monitors and alarm sensors. Please confirm all alarm monitors and sensors are provided by the controls contractor as part of their HVAC system and not by the fume hood which will not interface or control the HVAC system.	Subcontractor	5/21/2019	The fume hood manufacturer must provide and install airflow monitors and alarms that are compatible with the specified HVAC controls and BAS system.	Arch.	5/22/2019
Addendum #3	BP-12B	123553 2.13 H Matching requires sequence matching by room. Please confirm intent is to have sequence match lab casework veneers, this is a cost and lead time item.	Subcontractor	5/21/2019	The intent is to ensure that all veneers within an individual room have an acceptable level of uniformity of grain and color, subject to approval of veneer sample. In the interest of not adding additional cost to the project, we will remove the requirement for sequence matching from the specifications.	Arch.	5/22/2019
Addendum #3	BP-12B	123553 2.14 E gas piping within flexible casework system comply with Division 22 sections. 226113 requires lab piping for Air, C02, N2, cylinder Gas be oxy-cleaned and capped. Please confirm the Flexible Casework System internal factory pre-piping should be Oxy-cleaned.	Subcontractor	5/21/2019	Yes, the service piping within the laboratory casework must comply with Division 22 sections.	Arch.	5/23/2019
Addendum #3	BP-12B	123553 2.19 E drawer slides indicates several grades based on drawer size; however, many casework types scheduled in A10.05 will have multiple drawer slide grades within the same cabinet. For consistency, please confirm it is acceptable to standardize Grade 1HD within a single cabinet body or casework type.	Subcontractor	5/21/2019	If the desire is to use only one grade of drawer slide, then it should be the Heavy Duty Grade 1HD-200. If this results in a cost increase, then all drawer slides should comply with the original specification requirements.	Arch.	5/23/2019
5 Addendum #3	BP-12B	123553 2.25 C.1 notes vandal resistant faucets and fixtures often required in K12 settings; however, the Chicago Faucet model numbers indicated do not include the VR features (or cost). Please confirm VR is not required for the lab faucets and fixtures.	Subcontractor	5/21/2019	No, the lab service fittings are not required to be vandal resistant. Any reference to VR fixtures will be removed from the specification.	Arch.	5/23/2019
6 Addendum #3	BP-12B	123535 2.25E Finish stated chromium plated with clear epoxy coating referring to 090000 for plated metal finish. 090000-4 Finish Schedule Fixtures indicates satin chrome finish; however, Chicago Faucet model numbers indicated are polished chrome plated finish. Please confirm the lab fixtures are chromium plated in a satin chrome finish with clear epoxy coating.	Subcontractor	5/21/2019	Satin chrome finish is the design intent. Fixture schedule will be revised to indicate model numbers that are satin chrome finish.	Arch.	5/23/2019
7 Addendum #3	BP-12B	The spec appears to be all wood cabinets (not metal with wood fronts). The casework key legend on A10.01 indicates W for wood, M for metal, etc. Most of the section details on A10.06 indicate metal boxes with wood fronts. Almost all of the casework elevations call for "W" or Wood cabinets. Please clarify if the intent is for the casework to be all wood, both boxes and fronts, or if the intent is to have metal boxes with wood fronts as referenced in several details on sheet A10.06	Subcontractor	5/22/2019	The specifications are correct- the final design intent was to go with all wood cabinets and doors/drawer fronts. There are a few details that show metal cabinets that are obsolete.	Arch.	5/23/2019
3 Addendum #3	BP-08A	Question on opening 236.2. Per the door schedule the hardware set for this opening is INT52(door with side lite & Transom. However the elevation in the drawings shows a plain door. Please advise.	Subcontractor	5/22/2019	The correct hardware set for this door is INT-61.	Arch.	5/23/2019
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TASK ID	TASK	WORK	START DATE	FINISH DATE				1 A	M J	J	A	S O	N	D	J	F 	M		/ J	J	A
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1758	NOTICE TO PROCEED / SCO PRECONSTRUCTION MEETING @ SCIENCE BLDG	0	27-Jun-19		0				1758		CE TO F	ROCEED / S	SCO PRE	CONSTRU	CTION	MEET	ING @	SCIENC	E BLDG		
2578	FIRE WATER CONNECTION / FLOW TEST	0		22-Oct-19*	0									VATER COI				TEST			
2568	DOMESTIC WATER CONNECTION	0	23-Oct-19*		0									STIC WATI							
2588	NATURAL GAS CONNECTION	0		31-Oct-19*	0							2588	NAT	URAL GAS							
2548	LARGE EQUIPMENT IN PENTHOUSE (ROOF CLOSE-IN)	0		02-Mar-20*	6										254						•
1040 1030	TEMPORARY WINDOW DRY IN BUILDING TOP OUT	10 0	25-Mar-20	04-Apr-20* 26-Mar-20*	21 4	<u> </u>													RARY WIN		
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2558	BUILDOUT & PERMANENT POWER AVAILABLE	30	16-Jun-20	22-Jul-20	52														2558	💻 ві	
1038	PERMANENT BUILDING DRY IN	0		01-Jul-20*	14														1038 4	PERMA	
1028	CONDITIONED AIR AVAILABLE	0	28-Sep-20		0																102
1768	BBC PROVIDED'S INSURANCE CERTIFICATE FOR STOCKING PERMIT @ SCIENCE BLDG	5	14-Jan-21	19-Jan-21	0																
1778	BBC RECEIVES STOCKING PERMIT	5	23-Jan-21	28-Jan-21	0																
1788	BENEFICIAL OCCUPANCY OF SCIENCE BLDG - STOCKING PERMIT	0		01-Feb-21	0																
1798	UNCC OWNER FURNITURE MOVE - IN	0		01-Feb-21	0									i i							
1010	ARCH / ENG FINAL PUNCHLIST COMPLETION	20	22-Feb-21	19-Mar-21	5																
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1060	FINAL SCO PUNCHLIST COMPLETION PROJECT CLOSEOUT / OWNER TRAINING	30 60	27-Mar-21 27-Mar-21	25-Apr-21* 25-May-21*	0																
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1280	BACKFLOW PREVENTER CERTIFICATION	15	20-Apr-20	08-May-20	221												1280		BACKFLO	W PREVE	
1310	ROOF MFG WARRANTY	15	12-Jun-20	02-Jul-20	183														310		
1330	LIGHTNING PROTECTION UL MAJOR CERTIFICATION	15	26-Jun-20	17-Jul-20	163														1330 🛛		ITNING
1240	EMERGENCY GENERATOR LOADING TESTING	5	13-Jul-20	17-Jul-20	173														1240	E EME	RGEN
1360	NFPA - 13 FIRE PROTECTION PIPING	15	28-Aug-20	18-Sep-20	119															136	•
1290	WATER CERTIFICATION / BACTERIA TEST	15	08-Sep-20	28-Sep-20	123															1	290
1420	FINAL ELEVATOR INSPECTION	15	07-Oct-20	23-Oct-20	108																1
1200	NFPA - 24 UNDERGROUND	15	02-Nov-20	20-Nov-20	84																
1300	SITE SURVEY	5	04-Dec-20	10-Dec-20	72																
1320	DESIGNER APPROVAL LETTER FOR LIFE SAFETY	20	20-Jan-21	16-Feb-21	28																
1380	SPECIAL INSPECTIONS FINAL REPORT	5	22-Jan-21	28-Jan-21	41	<u> </u>															
1140	NIGHT LIGHT TEST NFPA - 72 FIRE ALARM TESTING	15 15	22-Jan-21 22-Jan-21	11-Feb-21 11-Feb-21	31 0																
1170 1180	DUCT DETECTOR INSPECTION	15	22-Jan-21	11-Feb-21	31									i i							
1340	PROGRAM / TEST LIGHTING CONTROLS SYSTEM	15	22-Jan-21	11-Feb-21	21																
1350	DATA / PHONE TESTING	15	22-Jan-21	11-Feb-21	21																
1390	SCO FINAL ELECTRICAL SIGN OFF	5	12-Feb-21	18-Feb-21	26																
1370	SCO FINAL INSPECTION	10	15-Mar-21	26-Mar-21	0									ļ į							
TEST &	BALANCE / COMMISSIONING	146	08-Sep-20	13-Mar-21	0																
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1150	FILL & FLUSH SYSTEM	10	08-Sep-20	19-Sep-20	0															1	150
1160	TEST & START UP MECHANICAL SYSTEM	5	21-Sep-20	25-Sep-20	0																1160
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1110	TEST & BALANCE @ LOWER LEVEL	DAYS 5	02-Oct-20	07-Oct-20	Float 20	╇╋┷┷┙		ΗШ			ЩΠ			Щ				1110	TES	T & BA	LANCĘ@L	OWER LEVEL		+	
1070	TEST & BALANCE @ LEVEL 1	5	14-Oct-20	19-Oct-20	15																BALANCE @				
1080	TEST & BALANCE @ LEVEL 2	5	02-Nov-20	06-Nov-20	5	H -																E @ LEVEL 2			
1090	TEST & BALANCE @ LEVEL 3	5	14-Nov-20	19-Nov-20	0														1090			ANCE@LEVE			
1120	COMMISSIONING @ SCIENCE BUILDING	90	17-Nov-20	13-Mar-21	0														1120			-			ENCE BUILDING
1120	TEST & BALANCE @ MECHANICAL PENTHOUSE	5	20-Nov-20	28-Nov-20	0																TEST & BA		CHANICAL PE	-	
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		247	15-Jan-19	12-Nov-19	262																				
1122	DESIGN TEAM TO ADDRESS SCO COMMENTS & ASSEMBLE BID DOCUMENTS	42	15-Jan-19*	13-Mar-19	5	22 💻		DESIGN	I TEAM TO ADDRESS SCO CO	MMENTS	& ASSE	MBLE BI	DOCUM	ENTS											
1132	SCO FINAL REVIEW @ SCIENCE BLDG	20	13-Mar-19	09-Apr-19	5		1132 💻	📫 s	CO FINAL REVIEW @ \$CIENC	BLDG			¦												
1142	BBC PREPARE PGMP @ SCIENCE BLDG	15	14-Mar-19	03-Apr-19	9		1142 🗖	в	C PREPARE PGMP @ SCIENC	BLDG			1												
1152	UNCC APPROVAL OF PGMP @ SCIENCE BLDG	5	10-Apr-19	16-Apr-19	5		115	52 🔳	UNCC APPROVAL OF PGMP	SCIENCI	BLDG		¦												
1162	SUBMIT PGMP TO SCO FOR APPROVAL @ SCIENCE BLDG	5	17-Apr-19	23-Apr-19	5	1	1	162 🗖	SUBMIT PGMP TO SCO FOR	APPROV	AL @ SC	IENCE B	DG												
1172	PGMP CONTRACT INCREASE EXECUTED @ SCIENCE BLDG	1	23-Apr-19	23-Apr-19	5			1172	PGMP CONTRACT INCREAS	E EXECUT	ED@S		SLDG											+	
1412	BBC SUBMIT & APPROVE BASELINE SCHEDULE	15	27-Jun-19	15-Jul-19*	0				1412 📕 BBC SUB	MIT & API	ROVE	BASELIN	SCHEDU	JLE											
1312	BBC QC/QA PLAN SUBMISSION & APPROVAL	20	27-Jun-19	25-Jul-19*	0	11			1312 BBC Q				i								i				
1442	SEALED CONCRETE MOCK UP & APPROVAL	20	18-Oct-19	12-Nov-19	262										CK UP &	APPROVAL									
BIDDING		77	01-May-19	02-Aug-19	0	11				Γ			; T												
		28	01-May-19	05-Jun-19	18	H																		+ +	
	STRUCTURE PACKAGE	28			18																				
44.00			01-May-19	05-Jun-19				4400																	
1182	ADVERTISE FOR BIDS @ STEEL & CONCRETE PACKAGES	1	01-May-19*	01-May-19	0			1182					1												
1202	BID PERIOD @ STEEL & CONCRETE PACKAGES	15	02-May-19	22-May-19	0			1202																	
1362	BID OPENING @ STEEL & CONCRETE PACKAGES	1	23-May-19	23-May-19	0	μ			1362 BID OPENING @ STE				1								1				
1372	BBC SCOPE REVIEW WITH APPARENT LOW BIDDER @ STEEL & CONCRETE PACKAGES	2	24-May-19	28-May-19	0				1372 BBC SCOPE REVIEW				I T												
1382	ISSUE NTP / LOI TO RELEASE SUBMITTALS @ STEEL & CONCRETE PACKAGES	1	29-May-19	29-May-19	0				1382 I ISSUE NTP / LOI TO																
1392	BBC ISSUE SUBCONTRACTOR AGREEMENTS FOR STEEL & CONCRETE PACKAGES	5	30-May-19	05-Jun-19	15				1392 BBC ISSUE SUBCO	ONTRACT	ORAGR	EEMENT	\$ FOR \$T	EEL & C	CONCRE	TEPACKAGES									
	ING BID PACKAGES	66	01-May-19	02-Aug-19	0								1												
		66	01-May-19	02-Aug-19	0																				
2008	ADVERTISE FOR BIDS @ BALANCE OF PACKAGES	1	01-May-19*	01-May-19	0			2008	ADVERTISE FOR BIDS @ E	ALANCE	OF PAC	KAGES	1												
1352	BID PERIOD @ BALANCE OF PACKAGES	25	01-May-19	05-Jun-19	0			1352	BID PERIOD @ BA	LANCE OI	PACK	AGES													
1242	BBC PRE BID @ ALL PACKAGES	1	08-May-19*	08-May-19	17			1242	2 BBC PRE BID @ ALL PAC	KAGES			1												
1302	BBC RE-ADVERTISE FOR BIDS @ BALANCE OF PACKAGES	3	04-Jun-19	06-Jun-19	0				1302 BBC RE-ADVERTI	E FOR BI	DS@B	ALANCE	OF PACK/	AGES											
1402	1ST BID OPENING @ BALANCE OF PACKAGES	1	06-Jun-19	06-Jun-19	0				1402 1ST BID OPENING	@ BALAN	ICE OF	PACKAG	ŧs												
1322	POTENTIAL RE-BID PERIOD @ BALANCE OF PACKAGES	10	07-Jun-19	20-Jun-19	9				1322 💻 POTENTIAL RE	-BID PERI	OD@B	ALANCE	OF PACK	AGES											
1332	BBC TRUE UP PGMP @ALL PACKAGES / ESTABLISH OWNER RESERVE	14	07-Jun-19	26-Jun-19	0				1332 📕 BBC TRUE UF	PGMP@	ALL PA	CKAGES	/ ESTABL	ISH OV	VNER RE	SERVE									
1342	BBC SCOPE REVIEW WITH APPARENT LOW BID SUBS @ BALANCE OF PACKAGES	14	07-Jun-19	26-Jun-19	0				1342 📕 BBC SCOPE F	EVIEW W		ARENT L	OW BID S	SUBS @	BALAN	CE OF PACKAGE	s								
1422	ISSUE NTP / LOI TO RELEASE SUBMITTALS @ BALANCE OF PACKAGES	21	27-Jun-19	26-Jul-19	0	11			1422 ISSUE			EASE SU		s@ ВА		OF PACKAGES					1				
1432	BBC ISSUE SUBCONTRACTOR AGREEMENTS FOR BALANCE OF PACKAGES	21	05-Jul-19	02-Aug-19	0	11			1432 BBC	SSUESU	BCONT	RACTOR	GREEME		OR BAL	ANCE OF PACKA	GES								
PROCL	REMENT	268	30-May-19	27-Apr-20	215	11																			
	INATION STUDY	85	05-Jul-19	18-Oct-19	1																				
COORD			05-Jul-19	18-Oct-19	-	11							I								1				
		85																							
101-		85	05-Jul-19	18-Oct-19	1	ч —			4040	-															
1016		20	05-Jul-19	27-Jul-19	1	μ		_	1016 SUBM																
1026	A/E REVIEW & APPROVAL OF SUBMITTALS - COORDINATION STUDY EQUIPMENT	15	28-Jul-19	11-Aug-19	2									ALS-C	JOORDIN	IATION STUDY E	QUIPMENT				i				
1036	COORDINATION STUDY	40	12-Aug-19	03-Oct-19	2				1036			NATION									i				
1046	A/E REVIEW & APPROVAL OF COORDINATION STUDY	15	04-Oct-19	18-Oct-19	2					1046	IA/ER	EVIEW 8	APPROVA	AL OF C	COORDIN	ATION STUDY					i				
ARCHIT	ECTURAL	180	30-May-19	15-Jan-20	297								j								i				
REBAR		59	30-May-19	07-Aug-19	0																				
		59	30-May-19	07-Aug-19	0																				
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ERSION 2	1-May-19			UNC	CHA	RL	OTTE	SC	CIENCE BUIL	DIN	G														PAGE 2 OF
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	E 02-Jan-19					D	ים חו	۲	DULE															UNCO	SB-00C 5-21-

TASK ID	TASK	WORK	START DATE	FINISH DATE	Total	J F M A M J J A S O N D J F M A M J J A S O N D J F M A M	JJA	SO
-		DAYS			Float			
2348	SUBMITTALS - REBAR	20	30-May-19	26-Jun-19	0			
2358	REV/APPROVE - REBAR	14	27-Jun-19	10-Jul-19	0			
2368	RELEASE / FAB & DELIVER - REBAR	20	11-Jul-19	07-Aug-19	0			
STRUCT	URAL STEEL	131 131	30-May-19	08-Nov-19 08-Nov-19	5			
1006	SUBMITTALS - STRUCTURAL STEEL	30	30-May-19 30-May-19	11-Jul-19	4	1006 SUBMITTALS - STRUCTURAL STEEL		
1188	REV/APPROVE - STRUCTURAL STEEL	21	12-Jul-19	01-Aug-19	4			
1190	RELEASE / FAB & DELIVER - STRUCTURAL STEEL	70	02-Aug-19	01-Aug-15 08-Nov-19	4	1190 RELEASE/ FAB & DELIVER - STRUCTURAL STEEL		
	R LAB SPACE MOCK UP	60	01-Oct-19	17-Dec-19	253			
		60	01-Oct-19	17-Dec-19	253			
1498	FABRICATE & DELIVER - INTERIOR LAB SPACE MOCK UP	24	01-Oct-19	29-Oct-19	253	1498 FABRICATE & DELIVER - INTERIOR LAB SPACE MOCK UP		
1488	INTERIOR LAB SPACE MOCK UP	36	30-Oct-19	17-Dec-19	253	1488 INTERIOR LAB SPACE MOCK UP		
	DR WALL MOCK UP	136	09-Jul-19	02-Jan-20	77			
		136	09-Jul-19	02-Jan-20	77			
1418	SUBMITTALS - EXTERIOR MOCK UP	25	09-Jul-19	06-Aug-19	70			
1328	RELEASE / FAB & DELIVER - BRICK @ MOCK UP	20	07-Aug-19	04-Sep-19	74	1328 RELEASE / FAB & DELIVER - BRICK @ MOCK UP		
1338	RELEASE / FAB & DELIVER - PRECAST @ MOCK UP	20	07-Aug-19	04-Sep-19	74	1338 RELEASE / FAB & DELIVER - PRECAST @ MOCK UP		
1348	RELEASE / FAB & DELIVER - CURTAINWALL @ MOCK UP	30	07-Aug-19	18-Sep-19	64	1348 RELEASE / FAB & DELIVER - CURTAINWALL @ MOCK UP		
1428	OWNER APPROVAL OF MOCK UP LOCATION	5	05-Sep-19	11-Sep-19	64			
1308	BUILD EXTERIOR WALL MOCK UP	60	19-Sep-19	13-Dec-19	64			
1318	REV/APPROVE - EXTERIOR WALL MOCK UP	10	16-Dec-19	02-Jan-20	64	1318 E REV/APPROVE - EXTERIOR WALL MOCK UP		
1358	CHANCELLOR REVIEW & APPROVE MOCK UP	0		02-Jan-20	77	1358 CHANCELLOR REVIEW & APPROVEMOCK UP		
BRICK	IASONRY	59	05-Aug-19	18-Oct-19	131			
		59	05-Aug-19	18-Oct-19	131			
1192	SUBMITTALS - BRICK	15	05-Aug-19	23-Aug-19	111			
1194	REV/APPROVE - BRICK	14	24-Aug-19	06-Sep-19	166			
1196	RELEASE / FAB & DELIVER - BRICK	30	09-Sep-19	18-Oct-19	112	1196 RELEASE / FAB & DELIVER - BRICK		
CAST S	TONE	59	05-Aug-19	18-Oct-19	131			
		59	05-Aug-19	18-Oct-19	131			
10200	SUBMITTALS - CAST STONE	15	05-Aug-19	23-Aug-19	111			
10210	REV/APPROVE - CAST STONE	14	24-Aug-19	06-Sep-19	166	10210 REVIAPPROVE - CAST STONE		
10220	RELEASE / FAB & DELIVER - CAST STONE	30	09-Sep-19	18-Oct-19	112	10220 RELEASE / FAB & DELIVER - CAST \$TONE		
CURTAI	WALL	101	26-Jul-19	03-Dec-19	128			
		101	26-Jul-19	03-Dec-19	128			
1204	SUBMITTALS - CURTAINWALL	30	26-Jul-19	06-Sep-19	109			
1206		14	07-Sep-19	20-Sep-19	163			
1208	RELEASE / FAB & DELIVER - CURTAINWALL	50	23-Sep-19	03-Dec-19	109	1208 RELEASE / FAB & DELIVER - CURTAINWALL		
GLASS		100	05-Aug-19	11-Dec-19	297			
1000	SUBMITTALS - GLASS CANOPY	100 30	05-Aug-19	11-Dec-19 16-Sep-19	297 258			
1009	REV/APPROVE - GLASS CANOPY	30 14	05-Aug-19 17-Sep-19	16-Sep-19 30-Sep-19	258 373	1011 TREV/APPROVE - GLASS CANOPY		
1011	RELEASE / FAB & DELIVER - GLASS CANOPY	50	01-Oct-19	11-Dec-19	258	1013 RELEASE / FAB & DELIVER - GLASS CANOPY		
	/ FRAMES & HARDWARE	83	05-Aug-19	18-Nov-19	338			
		83	05-Aug-19	18-Nov-19	338			
1210	SUBMITTALS - DOORS / FRAMES & HARDWARE	25	05-Aug-19	09-Sep-19	294			+
1212	REV/APPROVE - DOORS / FRAMES & HARDWARE	14	10-Sep-19	23-Sep-19	423	1212 REV/APPROVE - DOØRS / FRAME\$ & HARDWARE		
1214	RELEASE / FAB & DELIVER - DOORS / FRAMES & HARDWARE	40	24-Sep-19	18-Nov-19	294	1214 RELEASE / FAB & DELIVER - DOORS / FRAMES & HARDWARE		
ELEVAT		110	05-Aug-19	27-Dec-19	309			
		110	05-Aug-19	27-Dec-19	309			
1216	SUBMITTALS - ELEVATORS	30	05-Aug-19	16-Sep-19	267			
1218	REV/APPROVE - ELEVATORS	14	17-Sep-19	30-Sep-19	386			
1220	RELEASE / FAB & DELIVER - ELEVATORS	60	01-Oct-19	27-Dec-19	267	1220 RELEASE / FAB & DELIVER - ELEVATOR\$		
MILLWO	RK	110	05-Aug-19	27-Dec-19	265			
		110	05-Aug-19	27-Dec-19	265			
VERGIG					<u></u>		PAGE	E 3 OF 14
VERSION 2	I-May-19			UNC	CHA	RLOTTE SCIENCE BUILDING		
DATA DAT	- 00 Jan 40						UNCCSB-000	C 5-21-19
DATA DATI	: vz-jan-19					BID SCHEDULE		

| UBMITTALS - MILLWORK
REV/APPROVE - MILLWORK
RELEASE / FAB & DELIVER - MILLWORK
WORK
SUBMITTALS - LAB CASEWORK
REV/APPROVE - LAB CASEWORK
RELEASE / FAB & DELIVER - LAB CASEWORK | DAYS 30 14 60 110 110 30 30 30 30 30 30 30 30 30 30 30 30 30 | 05-Aug-19
17-Sep-19
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30-Sep-19 | Float
227 |

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| RELEASE / FAB & DELIVER - MILLWORK
WORK
SUBMITTALS - LAB CASEWORK
REV/APPROVE - LAB CASEWORK | 60
110
110 | - | 30-Sep-19 | 200 |

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| WORK
SUBMITTALS - LAB CASEWORK
REV/APPROVE - LAB CASEWORK | 110
110 | 01-Oct-19 | | 329 | •

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 | 1224 | REV/AP | PROVE - MILL | WORK | |
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| SUBMITTALS - LAB CASEWORK
REV/APPROVE - LAB CASEWORK | 110 | | 27-Dec-19 | 227 |

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 | 122 | 26 | R | RELEAS | E/FAB | & DELI
 | IVER - I | місци | ORK | | |

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| REV/APPROVE - LAB CASEWORK | | 05-Aug-19 | 27-Dec-19 | 246 |

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| REV/APPROVE - LAB CASEWORK | 30 | 05-Aug-19 | 27-Dec-19 | 246 |

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| | | 05-Aug-19 | 16-Sep-19 | 210 |

 | | 1228
 | | | S-LAB CAS | EWORK | ĸ |
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| RELEASE / FAB & DELIVER - LAB CASEWORK | 14 | 17-Sep-19 | 30-Sep-19 | 304 |

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 | 1230 | REV/AP | PROVE - LAB | CASEW | vork |
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 | | | | | |
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| | 60 | 01-Oct-19 | 27-Dec-19 | 210 |

 | |
 | 123 | 32 | R | RELEAS | E/FAB | & DELI
 | IVER - I | | ASEWO | RK | |

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| • | 124 | 05-Aug-19 | 15-Jan-20 | 261 |

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| | 124 | 05-Aug-19 | 15-Jan-20 | 261 |

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| SUBMITTALS - FLOORING | 15 | 05-Aug-19 | 23-Aug-19 | 271 |

 | | 1246
 | 🗖 SU | IBMITTALS - F | | | |
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 | | | |
| REV/APPROVE - FLOORING | 14 | 24-Aug-19 | 06-Sep-19 | 395 |

 | | 1
 | 1248 💻 | REV/APPROV | E - FLOORING | G | |
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| RELEASE / FAB & DELIVER - FLOORING | 40 | 13-Nov-19 | 15-Jan-20 | 225 |

 | |
 | | 1250 | | REL | .EASE/I | FAB & I
 | DELIVE | ER - FL | OORING | 3 | |

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| | 59 | 05-Aug-19 | 18-Oct-19 | 325 |

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| | 59 | 05-Aug-19 | 18-Oct-19 | 325 |

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| SUBMITTALS - HARD TILE | 15 | 05-Aug-19 | 23-Aug-19 | 280 |

 | | 1252
 | SU | IBMITTALS - H | ARD TILE | | |
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| REV/APPROVE - HARD TILE | 14 | 24-Aug-19 | 06-Sep-19 | 408 |

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 | 1254 📫 | REV/APPROV | E - HARD TILE | E | |
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| RELEASE / FAB & DELIVER - HARD TILE | 30 | 09-Sep-19 | 18-Oct-19 | 281 |

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 | 1256 | REL | EASE / FAB & | | ER - HA | RD TIL
 | .E | | | | |

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| EC / PLUMB / SPRINKLER | 229 | 16-Jul-19 | 27-Apr-20 | 215 |

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| LER UNITS | 140 | 16-Jul-19 | 14-Jan-20 | 39 |

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| | 140 | 16-Jul-19 | 14-Jan-20 | 39 |

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| SUBMITTALS - AHUS | 30 | 16-Jul-19 | 26-Aug-19 | 32 |

 | | 1258 🗖
 | su su | UBMITTALS - A | \HUs | | |
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| REV/APPROVE - AHUS | 21 | 27-Aug-19 | 16-Sep-19 | 45 |

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 | 1260 | REV/APPR | OVE - AHUs | | |
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| RELEASE / FAB & DELIVER - AHUS | 80 | 17-Sep-19 | 14-Jan-20 | 33 |

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 | 1262 | | | | .EASE / F | FAB & I
 | DELIVE | ER - AH | Us | | |

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| EAR | 226 | 19-Jul-19 | 27-Apr-20 | 0 |

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| | 226 | 19-Jul-19 | 27-Apr-20 | 0 |

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| SUBMITTALS - PARRELL SWITCHGEAR / ATS | 30 | 19-Jul-19 | 29-Aug-19 | 20 |

 | | 1270 🗖
 | si | UBMITTALS - | PARRELL SWI | ITCHGE | EAR / AT | rs
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| REV/APPROVE - PARRELL SWITCHGEAR / ATS | 21 | 30-Aug-19 | 19-Sep-19 | 31 |

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 | 1272 | REV/APPR | OVE - PARREL | LL SWI | тсндел | AR / AT
 | s | | | | |

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| RELEASE / FAB & DELIVER - PARRELL SWITCHGEAR / ATS | 130 | 21-Oct-19 | 27-Apr-20 | 0 |

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 | | 1274 | | | |
 | — R | ELEAS | E/FAB | & DELIN | 'ER - PA | RRELL

 | SWITCI | HGEAR / | TS | | |
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| TURES | 116 | 05-Aug-19 | 06-Jan-20 | 205 |

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| | 116 | 05-Aug-19 | 06-Jan-20 | 205 |

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| SUBMITTALS - LIGHT FIXTURES | 30 | 05-Aug-19 | 16-Sep-19 | 189 |

 | | 1282
 | | | _S - LIGHT FIX | XTURES | s |
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| REV/APPROVE - LIGHT FIXTURES | 14 | 17-Sep-19 | 30-Sep-19 | 274 |

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 | 1284 | REV/AP | PROVE - LIGH | IT FIXTU | URES |
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| RELEASE / FAB & DELIVER - LIGHT FIXTURES | 50 | 21-Oct-19 | 06-Jan-20 | 175 |

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 | | 1286 | | RELEA | ASE / FA | B & DE
 | ELIVER | t - LIGH | IT FIXTL | JRES | |

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| P | 90 | 05-Aug-19 | 27-Nov-19 | 0 |

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| | 90 | 05-Aug-19 | 27-Nov-19 | 0 |

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| SUBMITTALS - FIRE PUMP | 30 | 05-Aug-19 | 16-Sep-19 | 0 |

 | | 2378
 | | | S - FIRE PUM | /IP | |
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 | | | |
| REV/APPROVE - FIRE PUMP | 14 | 17-Sep-19 | 30-Sep-19 | 0 |

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 | 2388 | REV/AP | PROVE - FIRE | PUMP | |
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| RELEASE / FAB & DELIVER - FIRE PUMP | 40 | 01-Oct-19 | 27-Nov-19 | 0 |

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 | 239 | 8 | RELEAS | SE / FAB | 3 & DELI | IVER - F
 | FIRE PL | UMP | | | |

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| UNITS | 117 | 05-Aug-19 | 07-Jan-20 | 138 |

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| | 117 | 05-Aug-19 | 07-Jan-20 | 138 |

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| SUBMITTALS - FAN COIL UNITS | 30 | 05-Aug-19 | 16-Sep-19 | 117 |

 | | 2408
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| REV/APPROVE - FAN COIL UNITS | 21 | 17-Sep-19 | 07-Oct-19 | 171 |

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 | 2418 | REV/A | PPROVE - FAN | | UNITS |
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| RELEASE / FAB & DELIVER - FAN COIL UNITS | 60 | 08-Oct-19 | 07-Jan-20 | 117 |

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 | 24 | 428 | | RELE/ | ASE / FA | AB & DE
 | ELIVER | R-FAN | COILUI | NITS | |

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| | 117 | 05-Aug-19 | 07-Jan-20 | 97 |

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| | 117 | 05-Aug-19 | 07-Jan-20 | 97 |

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| SUBMITTALS - VAV'S | 30 | 05-Aug-19 | 16-Sep-19 | 81 |

 | | 2438
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| REV/APPROVE - VAV'S | 21 | 17-Sep-19 | 07-Oct-19 | 121 |

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| RELEASE / FAB & DELIVER - VAVS | 60 | 08-Oct-19 | 07-Jan-20 | 81 |

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 | 24 | 458 | | RELE/ | ASE/ FA | AB & DE
 | ELIVER | 2 - VAV | s | | |

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| AL FIRE SHUTTERS | 123 | 05-Aug-19 | 14-Jan-20 | 304 |

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| | | 05-Aug-19 | 14-Jan-20 | 304 |

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| SUBMITTALS - HORIZONTAL FIRE SHUTTERS | 30 | 05-Aug-19 | 16-Sep-19 | 264 |

 | | 2468
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| REV/APPROVE - HORIZONTAL FIRE SHUTTERS | 14 | 17-Sep-19 | 30-Sep-19 | 381 |

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| RELEASE / FAB & DELIVER - HORIZONTAL FIRE SHUTTERS | 70 | 01-Oct-19 | 14-Jan-20 | 264 |

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 | 248 | 38 | | REL | EASE / I | FAB & I
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| | UBMITTALS - HARD TILE
EV/APPROVE - HARD TILE
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UBMITTALS - PARRELL SWITCHGEAR / ATS
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TURES
UBMITTALS - LIGHT FIXTURES
EV/APPROVE - LIGHT FIXTURES
EV/APPROVE - LIGHT FIXTURES
ELEASE / FAB & DELIVER - LIGHT FIXTURES
UBMITTALS - FIRE PUMP
ELEASE / FAB & DELIVER - FIRE PUMP
USMITTALS - FIRE PUMP
ELEASE / FAB & DELIVER - FIRE PUMP
USMITTALS - FAN COIL UNITS
ELEASE / FAB & DELIVER - FIRE PUMP
USMITTALS - FAN COIL UNITS
ELEASE / FAB & DELIVER - FAN COIL UNITS | Bit 39 UBMITTALS - HARD TILE 16 EVAPPROVE - HARD TILE 30 ELEASE / FAB & DELIVER - HARD TILE 30 EC / PLUMB / SPRINKLER 223 ER UNITS 140 UBMITTALS - AHUS 30 EVAPPROVE - AHUS 30 EVAPPROVE - AHUS 30 EVAPPROVE - AHUS 30 DIBMITTALS - AHUS 30 EVAPPROVE - AHUS 30 DIBMITTALS - AHUS 30 EVAPPROVE - ARRELL SWITCHGEAR / ATS 30 VAPPROVE - PARRELL SWITCHGEAR / ATS 30 UBMITTALS - LIGHT FIXTURES 30 EVAPPROVE - FARRELL SWITCHGEAR / ATS 116 UBMITTALS - LIGHT FIXTURES 30 EVAPPROVE - IGHT FIXTURES 30 EVAPROVE - LIGHT FIXTURES 30 EVAPROVE - IGHT FIXTURES 30 EVAPROVE - FIRE PUMP 40 INTS 117 UBMITTALS - FIRE PUMP 40 INTS 117 UBMITTALS - FIRE PUMP 40 INTS | 99 06-Augr19 UBMITTALS - HARD TILE 15 06-Augr19 EVAPPROVE - HARD TILE 14 24-Augr19 ELEASE / FAB & DELIVER - HARD TILE 30 09-39-19 EC / PLUMB / SPRINKLER 23 16-Jul 19 ER UNITS 140 16-Jul 19 UBMITTALS - AHUS 30 16-Jul 19 UBMITTALS - AHUS 30 16-Jul 19 UBMITTALS - ARUS 21 27-Augr19 ELEASE / FAB & DELIVER - AHUS 30 19-Jul 19 UBMITTALS - PARRELL SWITCHGEAR / ATS 30 19-Jul 19 UAPPROVE - PARRELL SWITCHGEAR / ATS 130 21-Oct 19 URES 116 06-Augr19 06-Augr19 URES 116 06-Augr19 06-Augr19 UBMITTALS - LIGHT FIXTURES 10 06-Augr19 117 UBMITTALS - FIRE PUMP 30 06-Augr19 117 | 99 65-Aug-19 16-Oct-19 UBMITTALS - HARD TILE 15 65-Aug-19 25-Aug-19 ELBASE / FAB & DELIVER - HARD TILE 30 09-Sign-19 16-Oct-19 ELBASE / FAB & DELIVER - HARD TILE 30 09-Sign-19 16-Oct-19 EC / PLUMB / SPRINKLER 29 16-Ui-19 27-Aigr-20 ER UNITS 140 16-Ui-19 27-Aigr-20 UBMITTALS - ANUS 30 16-Ui-19 26-Aug-19 USANTTALS - ANUS 30 16-Ui-19 26-Aug-19 USANTTALS - ANUS 30 16-Ui-19 27-Aug-30 USANTTALS - ANUS 30 16-Ui-19 26-Aug-19 USANTTALS - ANUS 30 16-Ui-19 27-Aug-30 USANTTALS - ANUS 30 16-Ui-19 27-Aug-30 UBMITTALS - PARRELL SWITCHGEAR / ATS 30 19-Ui-19 27-Aug-30 URRES 116 06-Aug-19 06-Aug-19 26-Aug-19 URRES 30 06-Aug-19 06-Aug-19 27-Aug-30 URRES 30 06-Aug-19 | Bit Bit D6Aug-19 18-Oct-19 325 UBMITTALS - HARD TILE 15 0-Aug-19 06-Sup-19 08 ELEASE / FAB & DELIVER - HARD TILE 30 0-9-Sup-19 18 21 EC/ / FLUMB/ SPRINKLER 223 16-Jul-19 21-Sup-20 21 ER UNITS 140 16-Jul-19 14-Jul-19 22-Aug-19 32 UBMITTALS - ANDS 30 16-Jul-19 14-Jul-19 12-Jul-19 16-Sup-19 32 UBMITTALS - ANDS 30 16-Jul-19 12-Jul-19 16-Sup-19 12 27-Aug-19 16-Sup-19 12 27-Ap-20 0 UBMITTALS - ANDS 30 17-Sup-19 14-Jun-20 33 27-Sup-19 14-Jun-20 33 2AR 226 19-Jul-19 27-Ap-20 0 0 14-Jun-20 30 2AR 230 19-Jul-19 27-Ap-20 0 0 0 14-Jun-20 20 UBMITTALS - INARCLL SWITCHOEAR / ATS 30 15-Jul-19 0-Sup-19 <t< td=""><td>S0 054/up19 190/ch19 225 UBMITTALS-HARD TILE 15 064/up19 224/up19 30 UBMITTALS-HARD TILE 16 064/up19 224/up18 30 ELARS/FIAB DELIVER-HARD TILE 30 065/sp-19 146/u19 274/up18 31 EC / PLUMB / SPRINKLER 229 146/u19 274/up18 31 EC / PLUMB / SPRINKLER 30 06/sb-19 146/u19 274/up18 31 EMMTTALS-ANUS 30 166/u19 274/up18 156/up19 42 EMAPROVE-ANUS 21 274/up18 156/up19 43 33 AR 226 19/u419 274/up18 0 19/u419 24/up18 UBMITTALS-PARELL SWITCHOEAR / ATS 30 19/u419 274/up18 0 10/up18 274/up18 0 URESS 16 05/up19 16/up19 06/up18 274/up18 0 UBMITTALS-PARELL SWITCHOEAR / ATS 30 06/up19 274/up18 0 0 URESS</td><td>Same Same Same Same Suppricing 14 Samp 14 Samp Samp Samp Suppricing 14 Samp 16 Samp S</td><td>9 9</td><td>Image: Note: The image: Strate in the image: Stra</td><td>Bit Market - Mark Title Bit Market - Market</td><td>100 05-mage 15-mage 10-mathematical 10-mathematical NUMPTIVAS-HAND TLE 4 05-mage 00 00-mathematical 0-mathematical 0-mathematical</td><td>Image: section of the sectio</td><td>Image: Second Second</td><td>No. No. No.<td>No. No. No.<td>1 0</td></td></td></t<> <td>9 90 90 90 90 90 90 90 BUTTALS - MARC LE 64 90 64 90 64 90 90 BUTTALS - MARC LE 64 90</td> <td>Image: Note State S</td> <td>Instrum Instrum <t< td=""><td>Instruct Instruct Instruct</td><td>Image: section of the sectin of the section of the section</td><td>Name Nome Nome</td><td>Name Name Nam< Name Name Name</td><td>Name Name Nam Name Name Name</td><td>Image: Section 2016 Image: Section 2016</td><td>1 1</td></t<><td>Normal Sector Normal S</td><td>NUMBER NUMBER NUMBER</td></td> | S0 054/up19 190/ch19 225 UBMITTALS-HARD TILE 15 064/up19 224/up19 30 UBMITTALS-HARD TILE 16 064/up19 224/up18 30 ELARS/FIAB DELIVER-HARD TILE 30 065/sp-19 146/u19 274/up18 31 EC / PLUMB / SPRINKLER 229 146/u19 274/up18 31 EC / PLUMB / SPRINKLER 30 06/sb-19 146/u19 274/up18 31 EMMTTALS-ANUS 30 166/u19 274/up18 156/up19 42 EMAPROVE-ANUS 21 274/up18 156/up19 43 33 AR 226 19/u419 274/up18 0 19/u419 24/up18 UBMITTALS-PARELL SWITCHOEAR / ATS 30 19/u419 274/up18 0 10/up18 274/up18 0 URESS 16 05/up19 16/up19 06/up18 274/up18 0 UBMITTALS-PARELL SWITCHOEAR / ATS 30 06/up19 274/up18 0 0 URESS | Same Same Same Same Suppricing 14 Samp 14 Samp Samp Samp Suppricing 14 Samp 16 Samp S | 9 9 | Image: Note: The image: Strate in the image: Stra | Bit Market - 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PURE W	ATER FILTRATION SYSTEM	DAYS 110	05-Aug-19	27-Dec-19	Float 187	╉┧┵┵┶			┞╹╹╹╹																	╀┸┸┸╀┸			┶┶┵┵┿┵┶┶
		110	05-Aug-19	27-Dec-19	187										-														
2498	SUBMITTALS - PURE WATER FILTRATION SYSTEM	30	05-Aug-19	16-Sep-19	157	11				2498			PURE WA	ATER FILT	RATION	SYSTEM	n						i						
2508	REV/APPROVE - PURE WATER FILTRATION SYSTEM	14	17-Sep-19	30-Sep-19	227						250	8 🗖 REV/APPRO	VE - PUR	E WATER	FILTRAT	ION SY	STEM						i						
2518	RELEASE / FAB & DELIVER - PURE WATER FILTRATION SYSTEM	60	01-Oct-19	27-Dec-19	157						:	2518	F	RELEASE	/ FAB & I	ELIVER	R - PURE	WATER		TION SYS	тем		ĺ						
PLUMBI	NG FIXTURES	77	05-Aug-19	11-Nov-19	338																		1						
		77	05-Aug-19	11-Nov-19	338					-					-														
1294	SUBMITTALS - PLUMBING FIXTURES	30	05-Aug-19	16-Sep-19	296	11				1294			PLUMBIN		RES								i						
1296	REV/APPROVE - PLUMBING FIXTURES	14	17-Sep-19	30-Sep-19	427						129	6 🗖 REV/APPRO	VE - PLU		XTURES								ĺ						
1298	RELEASE / FAB & DELIVER - PLUMBING FIXTURES	30	01-Oct-19	11-Nov-19	294							1298 RE	LEASE /	FAB & DE	LIVER - I	LUMBI	NG FIXT	URES					i						
	ATIONS	86	25-Jul-19	11-Nov-19	3																		Í						
						H				_			i		_								i						
LOWER	LEVEL / AREA D & E	86	25-Jul-19	11-Nov-19	3																								
		86	25-Jul-19	11-Nov-19	3																		i I						
		86	25-Jul-19	11-Nov-19	3																								
1368	FRESHEN UP EROSION CONTROL @ SITE	5	25-Jul-19	30-Jul-19	0							HEN UP EROSION CO		@ SILE									i l						
1448		8	08-Aug-19	19-Aug-19	0	11						DIG F/R/P FOOTINGS	-										_		_			_	
2018	FORM & POUR PIERS & ELEVATOR PIT @ CL 5 & 6	8	20-Aug-19	28-Aug-19	0							FORM & POUR PIEF			T@CL	& 6							1						
2028	DIG F/R/P FOOTINGS @ CL 4	8	20-Aug-19	28-Aug-19	15					2028		DIG F/R/P FOOTING	-										i l						
2038	INSTALL CONCRETE FOUNDATION WALLS @ CL 8	8	26-Aug-19	05-Sep-19	0					203		INSTALL CONCRE	i i			Т							i l						
2048	INSTALL CONCRETE FOUNDATION WALLS @ CL M & RETAINING WALL @ CL J	8	06-Sep-19	16-Sep-19	2					:	2048					-			WALL	@ CL J			i						
2068	INSTALL U/G HOT WATER / CHILLED WATER @ BASEMENT	21	06-Sep-19	02-Oct-19	0						2068	INSTALL U/	G HOT W	ATER / CH	HILLED V	ATER (@ BASEI	MENT					i						
2058	INSTALL CONCRETE FOUNDATION WALLS @ CL 4	8	17-Sep-19	25-Sep-19	2						205	58 📕 INSTALL COM				-							İ						
3478	INSTALL PERIMETER WATERPROOFING @ BASEMENT	12	18-Sep-19	02-Oct-19	27						347		1			-	ASEMEN	г					i						
2088	INSTALL U/G PLUMBING @ BASEMENT	15	26-Sep-19	14-Oct-19	2						2	088 💻 INSTALL	U/G PLU	MBING @	BASEM	ENT							i						
2078	INSTALL U/G ELECTRICAL / DUCT BANKS @ BASEMENT	12	03-Oct-19	16-Oct-19	0							2078 💻 INSTALL	U/G ELE	CTRICAL	ирист	BANKS	@ BASE	MENT					i						
2098	INSTALL U/G GAS @ BASEMENT	12	17-Oct-19	31-Oct-19	0							2098 💻 INST/	ALL U/Ġ	GAS @ B/	ASEMEN	T							i						
2108	PREP & POUR SLAB ON GRADE @ AREA D & E	5	01-Nov-19	07-Nov-19	3							2108 🗖 PRI	ep & Pou	JR SLAB (ON GRAI	DE@AF	REA D &	E					i i						
2118	PREP & POUR SLAB ON GRADE @ AREA E	5	06-Nov-19	11-Nov-19	3							2118 📕 PF	REP & PO	UR SLAB	ON GRA	DE@A	REA E						i						
AREA A		55	08-Aug-19	17-Oct-19	10	13																							
		55	08-Aug-19	17-Oct-19	10																		ĺ						
		55	08-Aug-19	17-Oct-19	10																								
2148	DIG F/R/P FOOTINGS @ LVL 1 AREA A	21	08-Aug-19	05-Sep-19	0	1				2148			IGS@LV	/L 1 AREA	A														
2158	FORM & POUR PIERS @ LVL 1 AREA A	21	22-Aug-19	18-Sep-19	0					215	8 🗖		PIERS@		REAA														
2188	INSTALL U/G ELECTRICAL @ LVL 1 AREA A	6	19-Sep-19	25-Sep-19	6						218	88 📕 INSTALL U/G	ELECTR	ICAL @ L		AA							ĺ						
2218	INSTALL U/G PLUMBING @ LVL 1 AREA A	12	26-Sep-19	10-Oct-19	6						2	218 💻 INSTALL I	U/G PLUN	ABING @		EAA													
2248	PREP & POUR SLAB ON GRADE @ LVL 1 AREA A	6	11-Oct-19	17-Oct-19	10							2248 📕 PREP &	POUR \$L	AB ON G	RADE @	LVL 1 A	REAA						i						
AREA B		56	14-Aug-19	24-Oct-19	10	H -				-					-								1						
		56	14-Aug-19	24-Oct-19	10																		İ						
		56	14-Aug-19	24-Oct-19	10																								
2128	DIG F/R/P FOOTINGS @ LVL 1 AREA B	21	14-Aug-19	11-Sep-19	0	11 -				2128		DIG F/R/P FOOT	INGS Ø I	VI 1 ARE	АВ								ĺ						
2120	FORM & POUR PIERS @ LVL 1 AREA B	21	28-Aug-19	24-Sep-19	0	-11						FORM & POU	-										i l						
2100	INSTALL U/G ELECTRICAL @ LVL 1 AREA B	6	25-Sep-19	02-Oct-19	3	₩	+					198 INSTALL U/				EAR					+		+++						
2196	INSTALL U/G PLUMBING @ LVL 1 AREA B	12	03-Oct-19	16-Oct-19	3	-11								-															
2258	PREP & POUR SLAB ON GRADE @ LVL 1 AREA B	6	18-Oct-19	24-Oct-19	10	-11						2228 INSTALL 2258 PREP 8											i I						
		57	22-Aug-19	01-Nov-19	10	11											C C												
AREA C			-																				i I						
		57	22-Aug-19	01-Nov-19	10	11	+	_							_						+								
8465		57	22-Aug-19	01-Nov-19	10						。 _												i I						
2138	DIG F/R/P FOOTINGS@LVL 1 AREA C	21	22-Aug-19	18-Sep-19	0	-11							1-																
2178	FORM & POUR PIERS @ LVL 1 AREA C	21	05-Sep-19	01-Oct-19	0	-11					2178	FORM & PO		-									i I						
2208	INSTALL U/G ELECTRICAL @ LVL1 AREA C	6	02-Oct-19	08-Oct-19	0	-11									-														
2238	INSTALL U/G PLUMBING @ LVL 1 AREA C	12	09-Oct-19	22-Oct-19	0							2238 INSTAL			-			_										_	
2268	PREP & POUR SLAB ON GRADE @ LVL 1 AREA C	6	25-Oct-19	01-Nov-19	10							2268 📕 PREF	₽& POUR	SLAB OI	N GRADE	@LVL	1 AREA	C											
	TURE	120	12-Nov-19	09-Apr-20	230																								
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LEVEL 1		DAYS	12-Nov-19	15-Jan-20	Float 53		
		47	12-Nov-19	15-Jan-20	53		
		47	12-Nov-19	15-Jan-20	53		
1898	ERECT STEEL, DECKING & DETAIL @ LEVEL 1 DECK (0 & E)	12	12-Nov-19	02-Dec-19	2		
1908	PREP / POUR SOD @ LEVEL 1	6	20-Dec-19	06-Jan-20	- 14		
2298	SPRAY FIREPROOFING @ UNDER LEVEL 1	8	07-Jan-20	15-Jan-20	53		
LEVEL 2		56	20-Nov-19	03-Feb-20	45		
		56	20-Nov-19	03-Feb-20	45		
		56	20-Nov-19	03-Feb-20	45		
1538	ERECT STEEL, DECKING & DETAIL @ LEVEL 2 DECK	18	20-Nov-19	19-Dec-19			
1560	PREP / POUR SOD @ LEVEL 2 PREP / POUR SOD @ LEVEL 2	6	17-Jan-20	24-Jan-20	8		
2308	SPRAY FIREPROOFING @ UNDER LEVEL 2	8	25-Jan-20	03-Feb-20	45		
		44	12-Dec-19	25-Feb-20	45 27		
LEVEL 3							
		44	12-Dec-19	25-Feb-20	27		
		44	12-Dec-19	25-Feb-20	27		
1808	ERECT STEEL, DECKING & DETAIL @ LEVEL 3 DECK	18	12-Dec-19	16-Jan-20	2		
1570	PREP / POUR SOD @ LEVEL 3	6	04-Feb-20	13-Feb-20	2		
2318	SPRAY FIREPROOFING @ UNDER LEVEL 3	8	14-Feb-20	25-Feb-20	27		
MONUM	ENTAL STAIR STRUCTURE	17	13-Dec-19	16-Jan-20	238		
		17	13-Dec-19	16-Jan-20	238		
		17	13-Dec-19	16-Jan-20	238		
3318	INSTALL STRUCTURAL STRINGERS @MONUMENTAL STAIR -LEVEL 1 - 2	5	13-Dec-19	19-Dec-19	245		
9768	INSTALL STRUCTURAL STRINGERS @MONUMENTAL STAIR -LEVEL 2 - 3	5	09-Jan-20	16-Jan-20	238	238 9768 INSTALL STRUCTURAL STRINGERS @MONUMENTAL STAIR -LEVEL 2 - 3	
LEVEL 4	/ PENTHOUSE	51	07-Jan-20	05-Mar-20	37	37	
		51	07-Jan-20	05-Mar-20	37	37	
		51	07-Jan-20	05-Mar-20	37	37	
1838	ERECT STEEL, DECKING & DETAIL @ LEVEL 4 & PENTHOUSE DECK	18	07-Jan-20	03-Feb-20	2	2 1838 ERECT STEEL, DECKING & DETAIL @ LEVEL 4 & PENTHOUSE DECK	
1572	PREP / POUR SOD @ LEVEL 4 / PENTHOUSE	6	14-Feb-20	21-Feb-20	2	2 1572 PREP / POUR SOD @ LEVEL 4 / PENTHOUSE	
1602	CURE SLAB FOR LARGE EQUIPMENT @	4	22-Feb-20	25-Feb-20	5	5 1602 I CURE SLAB FOR LARGE EQUIPMENT @	
2328	SPRAY FIREPROOFING @ UNDER LEVEL 4	8	26-Feb-20	05-Mar-20	37	37 2328 SPRAY FIREPROOFING @ UNDER LEVEL 4	
ROOF		33	03-Mar-20	09-Apr-20	15	15	
		33	03-Mar-20	09-Apr-20	15		
		33	03-Mar-20	09-Apr-20	15	15	
1878	ERECT STEEL @ ROOF	21	03-Mar-20	26-Mar-20	4	4 878 ERECT STEEL @ ROOF	
1888	INSTALL DECKING @ ROOF - AREA A	6	11-Mar-20	17-Mar-20	15	15 1888 🔳 INSTALL DECKING @ ROOF - AREA A	
2278	INSTALL DECKING @ ROOF - AREA B	6	18-Mar-20	24-Mar-20	15		
2288	INSTALL DECKING @ ROOF - AREA C	6	25-Mar-20	31-Mar-20	15	15 2288 INSTALL DECKING @ ROOF - AREA C	
2338	SPRAY FIREPROOF ING @ UNDER ROOF	8	01-Apr-20	09-Apr-20	15		
ROOFIN		120	04-Feb-20	25-Jun-20	186		
		120	04-Feb-20	25-Jun-20	186		
		120	04-Feb-20	25-Jun-20	186		
		120	04-Feb-20	25-Jun-20	186		
1468	PREP & POUR LIGHTWEIGHT INSULATED CONCRETE SYSTEM @ LOW ROOF	12	04-Feb-20	17-Feb-20	16		
1508	INSTALL TPO ROOF & CAP @ LOW ROOF	12	18-Feb-20	02-Mar-20	16		
1398	INSTALL METAL ROOFING / TPO PARAPET @ HIGH ROOF	24	24-Feb-20	31-Mar-20	69		
1518	INSTALL STANDING SEAM @ HIGH ROOF - AREA A	18	03-Mar-20	23-Mar-20	16		
2748	INSTALL STANDING SEAM @ HIGH ROOF - AREA B	18	24-Mar-20	13-Apr-20	16		
2758	INSTALL STANDING SEAM @ HIGH ROOF - AREA C	18	14-Apr-20	04-May-20	16		
2768	INSTALL TPO ROOF @ HIGH ROOF	12	05-May-20	20-May-20	31		
2778	INSTALL TPO ROOFING - PARAPET @ HIGH ROOF	12	21-May-20	04-Jun-20	31		
2788	INSTALL ROOFING TRIM OUT @ ROOF	6	05-Jun-20	11-Jun-20	31		
2798	INSTALL LIGHTNING PROTECTION @ ROOF	12	12-Jun-20	25-Jun-20	186	186 2798 INSTALL LIGHTNING PROTECTION @ ROOF	
EXTERI	OR SKIN	203	27-Jan-20	30-Sep-20	77		
VERSION 2	1-May-19			UNC	CHA	CHARLOTTE SCIENCE BUILDING	PAGE 6 OF 14
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	TASK	WORK DAYS	START DATE	FINISH DATE	Total Float		
NORTH	ELEVATION (A)	98	27-Jan-20	21-May-20	182		
		98	27-Jan-20	21-May-20	182		
		98	27-Jan-20	21-May-20	182		
3358	INSTALL EXTERIOR FRAMING & SHEATHING @ NORTH (A) ELEVATION - L1	3	27-Jan-20	30-Jan-20	26	26 3358 INSTALL EXTERIOR FRAMING & SHEATHING @ NORTH (A) ELEVATION - L	
3368	INSTALL EXTERIOR FRAMING & SHEATHING @ NORTH (A) ELEVATION - L2	5	14-Feb-20	20-Feb-20	17	17 3368 SHEATHING @ NORTH (A) ELEVATION - L2	
3378	INSTALL EXTERIOR FRAMING & SHEATHING @ NORTH (A) ELEVATION - L3	5	24-Feb-20	29-Feb-20	10	10 3378 INSTALL EXTERIOR FRAMING & SHEATHING @ NORTH (A) ELEVATION - L3	
3388	INSTALL EXTERIOR FRAMING & SHEATHING @ NORTH (A) ELEVATION - L4	5	02-Mar-20	09-Mar-20	10	10 3388 INSTALL EXTERIOR FRAMING & SHEATHING @ NORTH (A) ELEVATION -L4	
1580	INSTALL AIR BARRIER @ NORTH (A) ELEVATION	4	10-Mar-20	16-Mar-20	10	10 1580 INSTALL AIR BARRIER @ NORTH (A) ELEVATION	
1582	INSTALL BRICK @ NORTH (A) ELEVATION	15	17-Mar-20	07-Apr-20	10	10 1582 III INSTALL BRICK @ NORTH (A) ELEVATION	
1584	INSTALL CURTAIN WALL / PUNCHED WINDOWS @ NORTH (A) ELEVATION - L1	4	09-Apr-20	14-Apr-20	21	21 1584 🔳 INSTALL CURTAIN WALL / PUNCHED WINDOWS @ NORTH (A) ELEVATION - L1	
9998	INSTALL CURTAIN WALL / PUNCHED WINDOWS @ NORTH (A) ELEVATION - L2	4	16-Apr-20	20-Apr-20	21	21 9998 INSTALL CURTAIN WALL / PUNCHED WINDOWS @ NORTH (A) ELEVATION - L2	
10008	INSTALL CURTAIN WALL / PUNCHED WINDOWS @ NORTH (A) ELEVATION - L3	4	21-Apr-20	25-Apr-20	43	43 10008 II INSTALL CURTAIN WALL / PUNCHED WINDOWS @ NORTH (A) ELEVATION -L3	
10018	INSTALL CURTAIN WALL / PUNCHED WINDOWS @ NORTH (A) ELEVATION - L4	4	27-Apr-20	01-May-20	43	43 10018 🖬 INSTALL CURTAIN WALL / PUNCHED WINDOWS @ NORTH (A) ELEVATION - L4	
10230	INSTALL GLASS CANOPY @ NORTH ELEVATION	15	02-May-20	21-May-20	182	182 10230 INSTALL GLASS CANOPY @ NORTH ELEVATION	
1586	INSTALL CAULKING @ NORTH (A) ELEVATION	5	04-May-20	09-May-20	43		
	LEVATION	69	31-Jan-20	15-May-20	39		
VESTE	EEVANON	69	31-Jan-20	15-May-20	39		
		69	31-Jan-20 31-Jan-20	15-May-20 15-May-20	39		
1540				-			
1548	INSTALL EXTERIOR FRAMING & SHEATHING @ WEST ELEVATION - L1	3	31-Jan-20	03-Feb-20	26		
3328	INSTALL EXTERIOR FRAMING & SHEATHING @ WEST ELEVATION - L2	3	21-Feb-20	25-Feb-20	17		
3338	INSTALL EXTERIOR FRAMING & SHEATHING @ WEST ELEVATION - L3	3	02-Mar-20	05-Mar-20	16		
3348	INSTALL EXTERIOR FRAMING & SHEATHING @ WEST ELEVATION - L4	3	10-Mar-20	13-Mar-20	16		
1388	INSTALL AIR BARRIER @ WEST ELEVATION	4	16-Mar-20	20-Mar-20	21		
1558	INSTALL BRICK @ WEST ELEVATION	20	21-Mar-20	20-Apr-20	21		
1568	INSTALL CURTAIN WALL / PUNCHED WINDOWS @ WEST ELEVATION - L1	3	21-Apr-20	24-Apr-20	39		
2828	INSTALL CURTAIN WALL / PUNCHED WINDOWS @ WEST ELEVATION - L2	3	25-Apr-20	28-Apr-20	39	39 2828 II INSTALL CURTAIN WALL / PUNCHED WINDOWS @ WEST ELEVATION - L2	
2868	INSTALL CURTAIN WALL / PUNCHED WINDOWS @ WEST ELEVATION - L3	3	30-Apr-20	04-May-20	39	39 2868 INSTALL CURTAIN WALL / PUNCHED WINDOWS @ WEST ELEVATION - L3	
2908	INSTALL CURTAIN WALL / PUNCHED WINDOWS @ WEST ELEVATION - L4	3	05-May-20	08-May-20	39	39 2908 II INSTALL CURTAIN WALL / PUNCHED WINDOWS @ WEST ELEVATION - L4	
1578	INSTALL CAULKING @ WEST ELEVATION	5	09-May-20	15-May-20	39	39 1578 INSTALL CAULKING @ WEST ELEVATION	
SOUTH	ELEVATION	196	04-Feb-20	30-Sep-20	77	77	
		196	04-Feb-20	30-Sep-20	77		
		196	04-Feb-20	30-Sep-20	77	77	
3398	INSTALL EXTERIOR FRAMING & SHEATHING @ SOUTH ELEVATION - L1	5	04-Feb-20	11-Feb-20	26	26 INSTALL EXTERIOR FRAMING & SHEATHING @ SOUTH ELEVATION - L1	
1450	INSTALL & INSPECT BUCKHOIST @ SOUTH ELEVATION	12	22-Feb-20	06-Mar-20	220	220 1450 INSTALL & INSPECT BUCKHOIST @ SOUTH ELEVATION	
3408	INSTALL EXTERIOR FRAMING & SHEATHING @ SOUTH ELEVATION - L2	5	27-Feb-20	03-Mar-20	17		
3418	INSTALL EXTERIOR FRAMING & SHEATHING @ SOUTH ELEVATION - L3	5	06-Mar-20	13-Mar-20	16		
3428	INSTALL EXTERIOR FRAMING & SHEATHING @ SOUTH ELEVATION - L4	5	16-Mar-20	21-Mar-20	16		
1588	INSTALL AIR BARRIER @ SOUTH ELEVATION	4	23-Mar-20	27-Mar-20	17		
1590	INSTALL BRICK @ SOUTH ELEVATION	21	09-Apr-20	09-May-20	10		
1592	INSTALL CURTAIN WALL / PUNCHED WINDOWS @ SOUTH ELEVATION - L1	4	11-May-20	15-May-20	19		
1002	INSTALL CURTAIN WALL / PUNCHED WINDOWS @ SOUTH ELEVATION - L1	4	18-May-20	22-May-20	19		
3068	INSTALL CURTAIN WALL / PUNCHED WINDOWS @ SOUTH ELEVATION - 12 INSTALL CURTAIN WALL / PUNCHED WINDOWS @ SOUTH ELEVATION - 13		26-May-20	-	19		
3068			20-1VIAV-20	30-May-20			
3108		4	-	05 Jun 20			
3108 3148	INSTALL CURTAIN WALL / PUNCHED WINDOWS @ SOUTH ELEVATION - L4	4	01-Jun-20	05-Jun-20	19		
3108 3148 1594	INSTALL CURTAIN WALL / PUNCHED WINDOWS @ SOUTH ELEVATION - L4 INSTALL CAULKING @ SOUTH ELEVATION - L1	4 8	01-Jun-20 06-Jun-20	18-Jun-20	19		
3108 3148 1594 1440	INSTALL CURTAIN WALL / PUNCHED WINDOWS @ SOUTH ELEVATION - L4 INSTALL CAULKING @ SOUTH ELEVATION - L1 REMOVE BUCKHOIST @ SOUTH ELEVATION	4 8 5	01-Jun-20 06-Jun-20 29-Aug-20	18-Jun-20 03-Sep-20	19 77	77 1440 REMOVE BUCKHOIST @ SOUTH ELEVATION	
3108 3148 1594 1440 1460	INSTALL CURTAIN WALL / PUNCHED WINDOWS @ SOUTH ELEVATION - L4 INSTALL CAULKING @ SOUTH ELEVATION - L1 REMOVE BUCKHOIST @ SOUTH ELEVATION IN-FILL CURTAINWALL BUCKHOIST LEAVE OUT @ SCIENCE	4 8 5 5	01-Jun-20 06-Jun-20 29-Aug-20 04-Sep-20	18-Jun-20 03-Sep-20 10-Sep-20	19 77 77	77 1440 REMOVE BUCKHOIST @ SOUTH ELEVATION 77 1460 IN-FILL CURTAINWALL BUCKHOIST LEAVE OUT @ SCIENCE	NCE
3108 3148 1594 1440 1460 1596	INSTALL CURTAIN WALL / PUNCHED WINDOWS @ SOUTH ELEVATION - L4 INSTALL CAULKING @ SOUTH ELEVATION - L1 REMOVE BUCKHOIST @ SOUTH ELEVATION IN-FILL CURTAINWALL BUCKHOIST LEAVE OUT @ SCIENCE INSTALL GLASS CANOPY @ SOUTH ENTRANCE	4 8 5 5 15	01-Jun-20 06-Jun-20 29-Aug-20 04-Sep-20 11-Sep-20	18-Jun-20 03-Sep-20 10-Sep-20 30-Sep-20	19 77 77 77 77	77 1440 REMOVE BUCKHOIST @ SOUTH ELEVATION 77 1460 INFILL CURTAINWALL BUCKHOIST LEAVE OUT @ SCIENT 77 1460 INFILL CURTAINWALL BUCKHOIST LEAVE OUT @ SCIENT 77 1596 INSTALL GLASS CANOPY @ SOUTH ENTRANCE	NCE
3108 3148 1594 1440 1460 1596	INSTALL CURTAIN WALL / PUNCHED WINDOWS @ SOUTH ELEVATION - L4 INSTALL CAULKING @ SOUTH ELEVATION - L1 REMOVE BUCKHOIST @ SOUTH ELEVATION IN-FILL CURTAINWALL BUCKHOIST LEAVE OUT @ SCIENCE	4 8 5 5 15 115	01-Jun-20 06-Jun-20 29-Aug-20 04-Sep-20 11-Sep-20 13-Feb-20	18-Jun-20 03-Sep-20 10-Sep-20 30-Sep-20 29-Jun-20	19 77 77 77 77 150	77 1440 REMOVE BUCKHOIST @ SOUTH ELEVATION 77 1460 IN-FILL CURTAINWALL BUCKHOIST LEAVE OUT @ SCIENT 77 150 INSTALL GLASS CANOPY @ SOUTH ENTRANCE	NCE
3108 3148 1594 1440 1460 1596	INSTALL CURTAIN WALL / PUNCHED WINDOWS @ SOUTH ELEVATION - L4 INSTALL CAULKING @ SOUTH ELEVATION - L1 REMOVE BUCKHOIST @ SOUTH ELEVATION IN-FILL CURTAINWALL BUCKHOIST LEAVE OUT @ SCIENCE INSTALL GLASS CANOPY @ SOUTH ENTRANCE	4 8 5 5 15	01-Jun-20 06-Jun-20 29-Aug-20 04-Sep-20 11-Sep-20	18-Jun-20 03-Sep-20 10-Sep-20 30-Sep-20	19 77 77 77 77	77 1440 REMOVE BUCKHOIST @ SOUTH ELEVATION 77 1460 IN-FILL CURTAINWALL BUCKHOIST LEAVE OUT @ SCIENT 77 150 INSTALL GLASS CANOPY @ SOUTH ENTRANCE	NCE
3108 3148 1594 1440 1460 1596	INSTALL CURTAIN WALL / PUNCHED WINDOWS @ SOUTH ELEVATION - L4 INSTALL CAULKING @ SOUTH ELEVATION - L1 REMOVE BUCKHOIST @ SOUTH ELEVATION IN-FILL CURTAINWALL BUCKHOIST LEAVE OUT @ SCIENCE INSTALL GLASS CANOPY @ SOUTH ENTRANCE EVATION	4 8 5 5 15 115	01-Jun-20 06-Jun-20 29-Aug-20 04-Sep-20 11-Sep-20 13-Feb-20	18-Jun-20 03-Sep-20 10-Sep-20 30-Sep-20 29-Jun-20	19 77 77 77 77 150	77 1440 REMOVE BUCKHOIST @ SOUTH ELEVATION 77 1460 INFILL CURTAINWALL BUCKHOIST LEAVE OUT @ SCIENT 77 150 INSTALL GLASS CANOPY @ SOUTH ENTRANCE 150 150	NCE
3108 3148 1594 1440 1460 1596	INSTALL CURTAIN WALL / PUNCHED WINDOWS @ SOUTH ELEVATION - L4 INSTALL CAULKING @ SOUTH ELEVATION - L1 REMOVE BUCKHOIST @ SOUTH ELEVATION IN-FILL CURTAINWALL BUCKHOIST LEAVE OUT @ SCIENCE INSTALL GLASS CANOPY @ SOUTH ENTRANCE	4 8 5 5 15 115 115	01-Jun-20 06-Jun-20 29-Aug-20 04-Sep-20 11-Sep-20 13-Feb-20 13-Feb-20	18-Jun-20 03-Sep-20 10-Sep-20 30-Sep-20 29-Jun-20 29-Jun-20	19 77 77 77 150 150	77 1440 REMOVE BUCKHOIST @ SOUTH ELEVATION 77 1440 INFILL CURTAINWALL BUCKHOIST LEAVE OUT @ SCIENT 77 150 INSTALL GLASS CANOPY @ SOUTH ENTRANCE 150 150 INSTALL GLASS CANOPY @ SOUTH ENTRANCE 32 3438 INSTALL EXTERIOR FRAMING & SHEATHING @ EAST ELEVATION -L1	NCE
3108 3148 1594 1440 1460 1596 EAST EL	INSTALL CURTAIN WALL / PUNCHED WINDOWS @ SOUTH ELEVATION - L4 INSTALL CAULKING @ SOUTH ELEVATION - L1 REMOVE BUCKHOIST @ SOUTH ELEVATION IN-FILL CURTAINWALL BUCKHOIST LEAVE OUT @ SCIENCE INSTALL GLASS CANOPY @ SOUTH ENTRANCE EVATION	4 8 5 5 15 15 115 115 115	01-Jun-20 06-Jun-20 29-Aug-20 04-Sep-20 11-Sep-20 13-Feb-20 13-Feb-20 13-Feb-20	18-Jun-20 03-Sep-20 10-Sep-20 30-Sep-20 29-Jun-20 29-Jun-20	19 77 77 77 150 150 150	77 1440 REMOVE BUCKHOIST © SOUTH ELEVATION 77 1460 IN-FILL CURTAINWALL BUCKHOIST LEAVE OUT © SCIENT 77 1596 INSTALL GLASS CANOPY © SOUTH ENTRANCE 150 1596 INSTALL GLASS CANOPY © SOUTH ENTRANCE 150 1596 1596 150 <td>NCE</td>	NCE
3108 3148 1594 1440 1460 1596 EAST EL 3438	INSTALL CURTAIN WALL / PUNCHED WINDOWS @ SOUTH ELEVATION - L4 INSTALL CAULKING @ SOUTH ELEVATION - L1 REMOVE BUCKHOIST @ SOUTH ELEVATION IN-FILL CURTAINWALL BUCKHOIST LEAVE OUT @ SCIENCE INSTALL GLASS CANOPY @ SOUTH ENTRANCE LEVATION	4 8 5 5 15 15 115 115 115 3	01-Jun-20 06-Jun-20 29-Aug-20 04-Sep-20 11-Sep-20 13-Feb-20 13-Feb-20 13-Feb-20 13-Feb-20	18-Jun-20 03-Sep-20 10-Sep-20 30-Sep-20 29-Jun-20 29-Jun-20 15-Feb-20	19 77 77 150 150 150 32	77 1440 REMOVE BUCKHOIST @ SOUTH ELEVATION 77 1460 IN-FILL CURTAINWALL BUCKHOIST LEAVE OUT @ SCIENT 77 150 INSTALL GLASS CANOPY @ SOUTH ENTRANCE 150 150 INSTALL GLASS CANOPY @ SOUTH ENTRANCE 150 150 INSTALL GLASS CANOPY @ SOUTH ENTRANCE 150 INSTALL STERIOR FRAMING & SHEATHING @ EAST ELEVATION - L1 21 INSTALL EXTERIOR FRAMING & SHEATHING @ EAST ELEVATION - L2	NCE
3108 3148 1594 1440 1460 1596 CASTEL 3438 3448	INSTALL CURTAIN WALL / PUNCHED WINDOWS @ SOUTH ELEVATION - L4 INSTALL CAULKING @ SOUTH ELEVATION - L1 REMOVE BUCKHOIST @ SOUTH ELEVATION IN-FILL CURTAINWALL BUCKHOIST LEAVE OUT @ SCIENCE INSTALL GLASS CANOPY @ SOUTH ENTRANCE LEVATION INSTALL EXTERIOR FRAMING & SHEATHING @ EAST ELEVATION - L1 INSTALL EXTERIOR FRAMING & SHEATHING @ EAST ELEVATION - L2	4 8 5 5 15 15 115 115 115 3 3 3	01-Jun-20 06-Jun-20 29-Aug-20 04-Sep-20 11-Sep-20 13-Feb-20 13-Feb-20 13-Feb-20 13-Feb-20 05-Mar-20	18-Jun-20 03-Sep-20 10-Sep-20 30-Sep-20 29-Jun-20 29-Jun-20 29-Jun-20 15-Feb-20 09-Mar-20	19 77 77 150 150 150 32 21	77 1440 REMOVE BUCKHOIST @ SOUTH ELEVATION 77 1440 IN-FILL CURTAINWALL BUCKHOIST LEAVE OUT @ SCIENT 77 1460 IN-FILL CURTAINWALL BUCKHOIST LEAVE OUT @ SCIENT 77 1596 IN-FILL CURTAINWALL BUCKHOIST LEAVE OUT @ SCIENT 150 1596 IN-FILL CURTAINWALL BUCKHOIST LEAVE OUT @ SCIENT 150 IN-FILL CURTAINWALL BUCKHOIST LEAVE OUT @ SCIENT 1596 150 IN-FILL CURTAINWALL BUCKHOIST LEAVE OUT @ SCIENT 1596 150 IN-FILL CURTAINWALL BUCKHOIST LEAVE OUT @ SCIENT 1596 150 IN-FILL CURTAINWALL BUCKHOIST LEAVE OUT @ SCIENT 1596 150 IN-FILL CURTAINWALL BUCKHOIST LEAVE OUT @ SCIENT 1596 150 IN-FILL CURTAINWALL BUCKHOIST LEAVE OUT @ SCIENT 1596 150 IN-FILL CURTAINWALL BUCKHOIST LEAVE OUT @ SCIENT 1596 150 IN-FILL CURTAINWALL BUCKHOIST LEAVE OUT @ SCIENT 1596 150 IN-FILL CURTAINWALL BUCKHOIST LEAVE OUT @ SCIENT 1596 150 IN-FILL CURTAINWALL BUCKHOIST LEAVE OUT @ SCIENT 1596 151 IN-FILL CURTAINWALL BUCKHOIST LEAVE OUT @ SCIENT 1596 152 IN-FILL CURTAINWALL BUCKHOIST LEAVE OUT @ SCIENT <t< td=""><td>NCE</td></t<>	NCE
3108 3148 1594 1440 1596 CASTEL 3438 3448 3458 3468	INSTALL CURTAIN WALL / PUNCHED WINDOWS @ SOUTH ELEVATION - L4 INSTALL CAULKING @ SOUTH ELEVATION - L1 REMOVE BUCKHOIST @ SOUTH ELEVATION IN-FILL CURTAINWALL BUCKHOIST LEAVE OUT @ SCIENCE INSTALL GLASS CANOPY @ SOUTH ENTRANCE EVATION INSTALL EXTERIOR FRAMING & SHEATHING @ EAST ELEVATION - L1 INSTALL EXTERIOR FRAMING & SHEATHING @ EAST ELEVATION - L2 INSTALL EXTERIOR FRAMING & SHEATHING @ EAST ELEVATION - L2 INSTALL EXTERIOR FRAMING & SHEATHING @ EAST ELEVATION - L3 INSTALL EXTERIOR FRAMING & SHEATHING @ EAST ELEVATION - L4	4 8 5 5 15 15 115 115 115 3 3 3 3 3	01-Jun-20 06-Jun-20 29-Aug-20 04-Sep-20 11-Sep-20 13-Feb-20 13-Feb-20 13-Feb-20 13-Feb-20 05-Mar-20 16-Mar-20	18-Jun-20 03-Sep-20 10-Sep-20 30-Sep-20 29-Jun-20 29-Jun-20 15-Feb-20 09-Mar-20 19-Mar-20 26-Mar-20	19 77 77 150 150 32 21 18 16	77 1440 REMOVE BUCKHOIST @ SOUTH ELEVATION 77 1460 IN-FILL CURTAINWALL BUCKHOIST LEAVE DUT @ SCIENT 77 150 INSTALL GLASS CANOPY @ SOUTH ENTRANCE 150 1596 INSTALL EXTERIOR FRAMING & SHEATHING @ EAST ELEVATION - L1 150 1596 1596 1596 150 1596 1596 1596 150 1596 1596 1596 150 1596 1596 1596 150 1596 1596 1596 150 1596 1596 <t< td=""><td></td></t<>	
3108 3148 1594 1440 1596 CASTEL 3438 3448 3458 3468	INSTALL CURTAIN WALL / PUNCHED WINDOWS @ SOUTH ELEVATION - L4 INSTALL CAULKING @ SOUTH ELEVATION - L1 REMOVE BUCKHOIST @ SOUTH ELEVATION IN-FILL CURTAINWALL BUCKHOIST LEAVE OUT @ SCIENCE INSTALL GLASS CANOPY @ SOUTH ENTRANCE LEVATION INSTALL EXTERIOR FRAMING & SHEATHING @ EAST ELEVATION - L1 INSTALL EXTERIOR FRAMING & SHEATHING @ EAST ELEVATION - L2 INSTALL EXTERIOR FRAMING & SHEATHING @ EAST ELEVATION - L3	4 8 5 5 15 15 115 115 115 3 3 3 3 3	01-Jun-20 06-Jun-20 29-Aug-20 04-Sep-20 11-Sep-20 13-Feb-20 13-Feb-20 13-Feb-20 13-Feb-20 05-Mar-20 16-Mar-20	18-Jun-20 03-Sep-20 10-Sep-20 30-Sep-20 29-Jun-20 29-Jun-20 15-Feb-20 09-Mar-20 19-Mar-20 26-Mar-20	19 77 77 150 150 32 21 18 16	77 1440 REMOVE BUCKHOIST @ SOUTH ELEVATION 77 1440 INFILL CURTAINWALL BUCKHOIST LEAVE OUT @ SCIENT 77 150 INSTALL GLASS CANOPY @ SOUTH ENTRANCE 150 1596 INSTALL GLASS CANOPY @ SOUTH ENTRANCE 150 1596 1596 150 1596 1596 150 150 <t< td=""><td></td></t<>	
3108 3148 1594 1440 1596 EAST EL 3438 3448 3458 3468 SION 2	INSTALL CURTAIN WALL / PUNCHED WINDOWS @ SOUTH ELEVATION - L4 INSTALL CAULKING @ SOUTH ELEVATION - L1 REMOVE BUCKHOIST @ SOUTH ELEVATION IN-FILL CURTAINWALL BUCKHOIST LEAVE OUT @ SCIENCE INSTALL GLASS CANOPY @ SOUTH ENTRANCE EVATION INSTALL EXTERIOR FRAMING & SHEATHING @ EAST ELEVATION - L1 INSTALL EXTERIOR FRAMING & SHEATHING @ EAST ELEVATION - L2 INSTALL EXTERIOR FRAMING & SHEATHING @ EAST ELEVATION - L2 INSTALL EXTERIOR FRAMING & SHEATHING @ EAST ELEVATION - L3 INSTALL EXTERIOR FRAMING & SHEATHING @ EAST ELEVATION - L4	4 8 5 5 15 15 115 115 115 3 3 3 3 3	01-Jun-20 06-Jun-20 29-Aug-20 04-Sep-20 11-Sep-20 13-Feb-20 13-Feb-20 13-Feb-20 13-Feb-20 05-Mar-20 16-Mar-20	18-Jun-20 03-Sep-20 10-Sep-20 30-Sep-20 29-Jun-20 29-Jun-20 15-Feb-20 09-Mar-20 19-Mar-20 26-Mar-20	19 77 77 150 150 32 21 18 16	77 1440 REMOVE BUCKHOIST @ SOUTH ELEVATION 77 1460 IN-FILL CURTAINWALL BUCKHOIST LEAVE DUT @ SCIENT 77 150 INSTALL GLASS CANOPY @ SOUTH ENTRANCE 150 1596 INSTALL EXTERIOR FRAMING & SHEATHING @ EAST ELEVATION - L1 150 1596 1596 1596 150 1596 1596 1596 150 1596 1596 1596 150 1596 1596 1596 150 1596 1596 1596 150 1596 1596 <t< td=""><td>NCE PAGE 7 C UNCCSB-00C 5-2</td></t<>	NCE PAGE 7 C UNCCSB-00C 5-2

DATA	DATE	02-Jan-19	

VERSION 21-May-19

BID SCHEDULE

UNC CHARLOTTE SCIENCE BUILDING

TASK ID	TASK	WORK	START DATE	FINISH DATE	Total	J	F M	A	A	S	O N	D	J F	M			J	JA	<u> </u>
3168	INSTALL AIR BARRIER @ EAST ELEVATION	DAYS 4	27-Mar-20	02-Apr-20	Float 33											TALL AIR E		R@EAS	TELE
3178	INSTALL BRICK @ EAST ELEVATION	21	21-Apr-20	22-May-20	21									;	3178 🛯		TALL	BRICK @	EAST
3188	INSTALL CURTAIN WALL / PUNCHED WINDOWS @ EAST ELEVATION - L1	3	26-May-20	29-May-20	21								İ I			3188 🛯 IN	ISTALL	L CURTAII	
1600	INSTALL CURTAIN WALL / PUNCHED WINDOWS @ EAST ELEVATION - L2	3	30-May-20	02-Jun-20	21											1600	NSTAL	L CURTA	JN WA
3228	INSTALL CURTAIN WALL / PUNCHED WINDOWS @ EAST ELEVATION - L3	3	04-Jun-20	06-Jun-20	21											3228	INSTA		
3268	INSTALL CURTAIN WALL / PUNCHED WINDOWS @ EAST ELEVATION - L4	3	08-Jun-20	11-Jun-20	21											3268	INST		
3198	INSTALL CAULKING @ EAST ELEVATION - L1	2	12-Jun-20	15-Jun-20	21											3198	INST	TALL CAU	JLKING
10240	INSTALL GLASS CANOPY @ EAST ENTRANCE	15	12-Jun-20	29-Jun-20	150								1			10240	— I	INSTALL G	GLASS
NORTH	ELEVATION (C)	87	17-Feb-20	01-Jul-20	10														
		87	17-Feb-20	01-Jul-20	10								1						
		87	17-Feb-20	01-Jul-20	10														
9798	INSTALL EXTERIOR FRAMING & SHEATHING @ NORTH (C) ELEVATION - L1	3	17-Feb-20	20-Feb-20	36								9798				AMING	& SHEAT	HING
9838	INSTALL EXTERIOR FRAMING & SHEATHING @ NORTH (C) ELEVATION - L2	3	10-Mar-20	13-Mar-20	22								98	38 🛯	INSTAL	LEXTERIO	RFRAM	MING & S	HEATH
9868	INSTALL EXTERIOR FRAMING & SHEATHING @ NORTH (C) ELEVATION - L3	3	20-Mar-20	23-Mar-20	18								l l	9868 1			OR FR	AMING 8	
9898	INSTALL EXTERIOR FRAMING & SHEATHING @ NORTH (C) ELEVATION - L4	3	27-Mar-20	31-Mar-20	16									9898		TALL EXTE	RIOR F	RAMING	& SHE
9808	INSTALL AIR BARRIER @ NORTH (C) ELEVATION	2	02-Apr-20	03-Apr-20	34								 	9808		TALL AIR E	BARRIE	ER @ NOF	RTH (C
9818	INSTALL BRICK @ NORTH (C) ELEVATION	15	11-May-20	04-Jun-20	10	-								-				LL BRICK	
9828	INSTALL CURTAIN WALL / PUNCHED WINDOWS @ NORTH (C) ELEVATION - L1	4	05-Jun-20	09-Jun-20	10								1			9828	IN\$TA		
9908	INSTALL CURTAIN WALL / PUNCHED WINDOWS @ NORTH (C) ELEVATION - L2	4	11-Jun-20	16-Jun-20	10													TALL CUR	
9948	INSTALL CURTAIN WALL / PUNCHED WINDOWS @ NORTH (C) ELEVATION - L3	4	18-Jun-20	22-Jun-20	10								 					STALL CU	
9978	INSTALL CURTAIN WALL / PUNCHED WINDOWS @ NORTH (C) ELEVATION - L4	4	23-Jun-20	29-Jun-20	10											9978		INSTALL C	
9848	INSTALL CAULKING @ NORTH (C) ELEVATION	2	30-Jun-20	01-Jul-20	10	-							1			984		INSTALL C	
INTERI		330	07-Jan-20	20-Feb-21	6														
BASEM		268	07-Jan-20	01-Dec-20	58														
AREAD		268	07-Jan-20	01-Dec-20	58														
	RAMING, INWALL & OH ROUGH IN	118	07-Jan-20	26-May-20	78	_						1050			DUOT		05115		
4658	INSTALL OH DUCTWORK @ BASEMENT - AREA D & E	11	07-Jan-20	18-Jan-20	73											-			
4648	INSTALL OH PLUMBING @ BASEMENT - AREA D & E	12	13-Jan-20	25-Jan-20	99							464	1			IBING @ B/			
4668	INSTALL OH MECHANICAL PIPING @BASEMENT - AREA D & E	18	13-Jan-20	01-Feb-20	93							466	1			CHANICAL F		-	
4678	INSTALL OH ELECTRICAL @ BASEMENT - AREA D & E	22	13-Jan-20	06-Feb-20	89												-		
4698	INSTALL OH DATAROUGH IN @ BASEMENT - AREA D & E	7	18-Jan-20	25-Jan-20	99							46	1				_		
4688	INSTALL OH SPRINKLER @ BASEMENT - AREA D & E	10	18-Jan-20	29-Jan-20	96							46	1			NKLER @ E			
4768	FOG / BLACK-OUT ABOVE CELING AREAS @ BASEMENT - AREAD & E	6	07-Feb-20	13-Feb-20	163														-
4638	INSTALL WALL FRAMING @ BASEMENT - AREA D & E	10	07-Feb-20	18-Feb-20	89											L FRAMIN			
4728	INSTALL IN-WALL MECHANICAL ROUGH IN @ BASEMENT - AREA D & E	10	13-Feb-20	24-Feb-20	138											WALL MEC			
4738	INSTALL IN-WALL GAS ROUGH IN @ BASEMENT - AREA D & E	10	13-Feb-20	24-Feb-20	138									_		WALL GAS			
4718	INSTALL IN-WALL PLUMBING ROUGH IN @ BASEMENT - AREA D & E	16	13-Feb-20	02-Mar-20	132								4718						
4708	INSTALL IN-WALL ELECTRICAL ROUGH IN @ BASEMENT - AREA D & E	14	05-May-20	22-May-20	16														
4748	MEPF IN-WALL INSPECTION (BY A/E) @ BASEMENT - AREA D & E	2	23-May-20	26-May-20	64										4	748 🛯 M	EPF IN	-WALL IN:	SPECT
	LL, PRIME PAINT & HARD TILE	35	27-May-20	08-Jul-20	90														
4758	H/T/F DRYWALL WALLS @ BASEMENT - AREA D & E	14	27-May-20	11-Jun-20	64											4758			
4788	INSTALL CEILING FRAMING @ BASEMENT - AREA D & E	3	02-Jun-20	04-Jun-20	111											4788			
4818	H/T/F DRYWALL CEILINGS @ BASEMENT - AREA D & E	4	05-Jun-20	09-Jun-20	111								1					DRYWAL	
4878	PRIME & 1ST COAT CEILINGS @ BASEMENT - AREA D & E	2	10-Jun-20	11-Jun-20	111													1E & 1ST C	
4778	PRIME & 1ST COAT WALLS @ BASEMENT - AREA D & E	4	12-Jun-20	16-Jun-20	64													ME & 1ST	
4808	INSTALL ACT GRID @ BASEMENT - AREA D & E	8	17-Jun-20	25-Jun-20	64													NSTALL AC	
4828	INSTALL IN-GRID MECHANICAL @ BASEMENT - AREA D & E	10	23-Jun-20	06-Jul-20	64													INSTALL	
4838	INSTALL IN-GRID ELECTRICAL @ BASEMENT - AREA D & E	10	23-Jun-20	06-Jul-20	64													INSTALL	
4848	INSTALL IN-GRID SPRINKLER @ BASEMENT - AREA D & E	10	23-Jun-20	06-Jul-20	64													INSTALL	
4868	MEPF IN-GRID INSPECTION @ BASEMENT - AREA D & E	2	07-Jul-20	08-Jul-20	64											48	368 I	MEPF IN	I-GRIE
FINAL FI	INISHES, FIXTURES & TRIMOUT	37	28-Sep-20	11-Nov-20	58														
4888	INSTALL ACT TILE @ BASEMENT - AREA D & E	4	28-Sep-20	01-Oct-20	0														4888
4908	INSTALL CASEWORK @ BASEMENT - AREA D & E	6	02-Oct-20	08-Oct-20	22		1	1	1	1			1			1			4908

S	0	N	D	J	F	M	Α	M	J	J	Α	S	0
ELEVA	TIO N												
AST EL	evatio	N		1									
WALL /	PUNCH	ED WI	NDOW	\$@EA	ST EL	EVATIO	N-L1						
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WALI	/ PUN	CHED V	VINDO	WS@E	AST E	LEVATI	ON - L3	3					
IN WAL	L / PUN	ICHED	WINDO	¢ws@	EAST	ELEVAT	10N - L	4					
KING @	EAST	ELEVA	TION -	Ĺ1									
	ANOPY			i i									
433 0/		U LAG											
				1									
-	NORTH			1									
ATHIN	G @ NC	ORTH (C) ELE	ATION	- L2								
HEATH	ING @	NORTH	I (C) EL	EVATIO	N - L3								
SHEAT			TH (C) E		ON - L	4							
				1									
	EVATI												
NORT	H (C) E	LEVATI	ON	1									
N WAL	L / PUN	CHED	WINDO	ws@	NORT	H (C) EL	EVATIO	DN - L1					
	LL / PL	NCHE		ows@		TH (C) E	ELEVAT	ION - L	2				
				1 -									
				bows	-								
RTAIN	WALL /	PUNC	HED W	NDOW	5@N	ORTH (C) ELE\	ATION	- L4				
ULKIN	G @ N(RTH (C) ELE	ATION									
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WALL	5 @ BA	SEMEN	T - AR	ĖAD&	E								
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AT CE	LINGS	@ BAS	EMEN	T-ARE	AD&E	F							
DAT W	ALLS @	BASE	MENT		D & E								
GRID	@ BAS	EMENT	- ARE	AD&E									
	_			1	T . A D'		c						
				SEMEN									
I-GRID	ELECT	RICAL	@ BAS	EMENT	-ARE	AD&E	1						
I-GRID	SPRIN	KLER @	D BASE	MENT	AREA	D & E							
RID IN	SPECT	ON @	BASEN	ENT -	READ	& E							
888	INST	ALLAC	TILE	@ BAS	EMEN	I - ARE	AD&E	ŧ					
4908	INS	TALL C	ASEW	ORK @	BASE	MENT -	AREA	D&E					
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TASK ID	TASK	WORK	START DATE	FINISH DATE	Total		F	MAM				N	D I J	F	ΜΙΔ	<u>M</u> J.	ΙΙΔ	S O	N			M I J	Δ Ι.Ι	S O
		DAYS	START DATE	TINISTIDATE	Float																			
4918	INSTALL MILLWORK @ BASEMENT - AREA D & E	4	09-Oct-20	13-Oct-20	50																SEMENT - ARE			
4928	INSTALL RESILIENT FLOORING @ BASEMENT - AREA D & E	4	14-Oct-20	17-Oct-20	50								1					4928 🛯	INSTALL R	ESILIENT FLOO	ORING @ BASE	MENT - AREA	D&E	
4938	INSTALL SPECIALTIES @ BASEMENT - AREA D & E	8	19-Oct-20	28-Oct-20	50																@ BASEMENT			
4948	FINAL PAINT @ BASEMENT - AREA D & E	6	29-Oct-20	04-Nov-20	50															-	MENT - AREA D			
4968	INSTALL FINAL MEPF DEVICE TRIM OUT @ BASEMENT - AREA D & E	5	05-Nov-20	11-Nov-20	50																F DEVICE TRIN	-		D&E
9608	INSTALL DOORS & HARDWARE @ BASEMENT - AREA D & E	5	05-Nov-20	11-Nov-20	58													9608	B 🔲 INST/	ALL DOORS & I	HARDWARE @	BASEMENT - A	READ&E	
PUNCH	& REPAIRS	14	12-Nov-20	01-Dec-20	58																			
4978	BBC CREATE PUNCH LIST @ BASEMENT - AREA D & E	2	12-Nov-20	13-Nov-20	58								i								H LIST @ BASI			
4988	SUBCONTRACTOR - BBC PUNCH COMPLETION @ BASEMENT - AREA D & E	5	14-Nov-20	19-Nov-20	58													49		1	R - BBC PUNCH		-	NT - AREA D &
4998	A/E CREATE PUNCH LIST @ BASEMENT - AREA D & E	2	20-Nov-20	23-Nov-20	58								i					4		i i	CH LIST @ BAS			
5008	SUBCONTRACTOR - A/E PUNCH COMPLETION @ BASEMENT - AREA D & E	5	24-Nov-20	01-Dec-20	58														5008 🗖 :	SUBCONTRAC	FOR - A/E PUNC	H COMPLETIC	ON @ BASEM	ENT - AREA D
MONUM	ENTAL STAIR BUILDOUT	24	04-Feb-20	02-Mar-20	288																			
		24	04-Feb-20	02-Mar-20	288																			
		24	04-Feb-20	02-Mar-20	288																			
9778	FITOUT MONUMENTAL STAIR FROM LEVEL 1 -2	12	04-Feb-20	17-Feb-20	288								9778	F F		NUMENTAL STAIR F	ROM LEVE	L1 -2						
9788	FITOUT MONUMENTAL STAIR FROM LEVEL 2 -3	12	18-Feb-20	02-Mar-20	288								978	8 💻	FITOUT N	IONUMENTAL STAI	R FROM L	EVEL 2 - 3		1				
LEVEL 1		272	04-Feb-20	12-Jan-21	35																			
AREAA	B&C	272	04-Feb-20	12-Jan-21	30							_												
WALL FF	RAMING, INWALL & OH ROUGH IN	107	04-Feb-20	10-Jun-20	28																			
5038	INSTALL OH DUCTWORK @ LEVEL 1 - AREA A, B & C	11	04-Feb-20	15-Feb-20	59								5038	🗖 IN	ISTALL OH	DUCTWORK@LEV	/EL 1 -ARE	A A, B & C						
5028	INSTALL OH PLUMBING @ LEVEL 1 - AREA A, B & C	28	06-Feb-20	09-Mar-20	105								5028			L OH PLUMBING @	LEVEL 1 -	AREA A, B 8	i C					
5058	INSTALL OH ELECTRICAL @ LEVEL 1 - AREA A, B & C	21	10-Feb-20	04-Mar-20	98								5058		INSTALL	OH ELECTRICAL @	EVEL 1 -	AREA A, B a	& C					
5048	INSTALL OH MECHANICAL PIPING @LEVEL1-AREAA, B&C	10	13-Feb-20	24-Feb-20	117								5048		INSTALL O	H MECHANICAL PIF	9NG@LE	/EL1-ARE/	4A, B & C	I				
5018	INSTALL WALL & SOFFIT FRAMING / TOP OUT @ LEVEL 1 - AREA A, B & C	8	17-Feb-20	25-Feb-20	79								501	8 🗖	INSTALL W	ALL & SOFFIT FRA	MING / TO	POUT@LE	VEL 1 - ARE	AA, B & C				
5108	INSTALL IN-WALL MECHANICAL ROUGH IN @ LEVEL 1 - AREA A, B & C	5	26-Feb-20	02-Mar-20	96								5	108 🗖	INSTALL	IN WALL MECHANIC	CAL ROUG	H IN @ LEV	EL 1 - AREA	A, B & C				
5098	INSTALL IN-WALL PLUMBING ROUGH IN @ LEVEL 1 - AREA A, B & C	8	26-Feb-20	05-Mar-20	93								5	098 🗖	INSTALL	IN-WALL PLUMBIN	g Rough	IN @ LEVEL	1-AREA A	B & C				
5118	INSTALL IN-WALL GAS ROUGH IN @ LEVEL 1 - AREA A, B & C	8	26-Feb-20	05-Mar-20	93								5	118 🗖	INSTALL	IN-WALL GAS ROU	IGH IN @ L	EVEL 1 - AR	EA A, B & C					
5078	INSTALL OH DATA ROUGH IN @ LEVEL 1 - AREA A, B & C	6	05-Mar-20	11-Mar-20	103									5078		L OH DATA ROUGH	IN@LEVE	L1-AREA	A, B & C					
5068	INSTALL OH SPRINKLER @ LEVEL 1 - AREA A, B & C	11	05-Mar-20	17-Mar-20	98								1	5068	INSTA	LL OH SPRINKLER	@LEVEL	-AREA A, E	3& C	1				
5088	INSTALL IN-WALL ELECTRICAL ROUGH IN @ LEVEL 1 - AREA A, B & C	14	13-May-20	29-May-20	16								1		50	88 💻 INSTALL	IN-WALL E	LECTRICAL	ROUGHIN	@ LEVEL 1 - A	REA A, B & C			
5128	MEPF IN-WALL INSPECTION (BY A/E) @ LEVEL 1 - AREA A, B & C	5	30-May-20	04-Jun-20	23								1			5128 🗖 MEPF II	N-WALL IN	SPECTION (BY A/E) @ L	EVEL 1 - AREA	A, B & C			
5148	FOG / BLACK-OUT ABOVE CEILING AREAS @ LEVEL 1 - AREA A, B & C	5	05-Jun-20	10-Jun-20	23											5148 🖬 FOG/	BLACK-O	JT ABOVE C	ELING ARE	AS @ LEVEL 1	-AREAA, B&			
DRYWA	L, PRIME PAINT & HARD TILE	67	11-Jun-20	01-Sep-20	81																			
5138	H/T/F DRYWALL WALLS @ LEVEL 1 - AREA A, B & C	18	11-Jun-20	01-Jul-20	23											5138 💻 H	/T/F DRYW		@LEVEL 1	-AREA A, B &	c 📃			
5168	INSTALL CEILING FRAMING @ LEVEL 1 - AREA A, B & C	5	17-Jun-20	22-Jun-20	23								I			5168 🔳 INS		ING FRAMI	NG @ LEVEI	1 - AREAA, B	& C			
9578	INSTALL HARD CEILING ELECTRICAL ROUGH IN @LEVEL 1 - AREA A, B & C	5	23-Jun-20	27-Jun-20	39											9578 🔳 IN	STALL HAI	RD CEILING	ELECTRICA		LEVEL 1 - ARE	AA, B & C		
9598	INSTALL HARD CEILING SPRINKLER ROUGH IN @ LEVEL 1 - AREA A, B & C	7	23-Jun-20	30-Jun-20	37											9598 🗖 IN	STALL HA	RD CEILING	SPRINKLE	R ROUGH IN @	LEVEL 1 ARE	АА, В & С		
9588	INSTALL HARD CEILING MECHANICAL ROUGH IN @ LEVEL 1 - AREA A, B & C	21	23-Jun-20	18-Jul-20	23											9588		HARD CEI		ANICAL ROUG	HIN@LEVEL1	-AREA A, B &	¢	
5158	PRIME & 1ST COAT WALLS @ LEVEL 1 - AREA A, B & C	9	02-Jul-20	14-Jul-20	39											5158 🗖	PRIME &	1ST COAT V	WALLS@L	VEL 1 - AREA	4, B & C			
5178	INSTALL HARD TILE @ LEVEL 1 - AREA A, B & C	11	15-Jul-20	27-Jul-20	110											5178		LL HARD TI		1-AREAA, B	&C			
9858	MEPF HARD CEILING INSPECTIONS @ LEVEL 1 - AREA A, B & C	5	20-Jul-20	24-Jul-20	23															1	1-AREA A, B	& C		
5198	H/T/F DRYWALL CEILINGS @ LEVEL 1 - AREA A, B & C	7	25-Jul-20	01-Aug-20	23								i i			5198	н/т/	DRYWALL	CEILINGS @	DEVEL 1 - ARI	АА, В & С			
5238	INSTALL DRYWALL CLOUD CEILINGS @ LEVEL 1 - AREA A, B & C	7	03-Aug-20	10-Aug-20	45											523	38 🗖 INS	TALL DRYV	VALL CLOU	D CHLINGS @	LEVEL 1 - AREA	А, В&¢		
5188	INSTALL ACT GRID @ LEVEL 1 - AREA A, B & C	8	03-Aug-20	11-Aug-20	23							-+				518	38 🗖 IN	TALL ACT	GRID @ LE\	EL 1 - AREA A,	B&C			
5258	PRIME & 1ST COAT CEILINGS @ LEVEL 1 - AREA A, B & C	5	11-Aug-20	18-Aug-20	45								1			5	258 🗖 F	RIME & 1ST		INGS@LEVEL	1-AREAA, B	kc		
5228	INSTALL IN-GRID SPRINKLER @ LEVEL 1 - AREA A, B & C	5	12-Aug-20	19-Aug-20	29								i i			5	228 🗖 I	NSTALL IN-	GRID SPRIN	KLER@LEVEL	1 AREAA, B	4c		
5218	INSTALL IN-GRID ELECTRICAL @ LEVEL 1 - AREA A, B & C	6	12-Aug-20	20-Aug-20	28								i			5	218 🗖 1	NSTALL IN-	GRID ELECT	RICAL @ LEVE	1 - AREA A, B	&C		
5208	INSTALL IN-GRID MECHANICAL @ LEVEL 1 - AREA A, B & C	11	12-Aug-20	26-Aug-20	23								i i			5	208 🗖	INSTALL IN	I-GRID MEC	HANICAL @ LE	VEL 1 - AREA A	, в & С		
5248	MEPF IN-GRID INSPECTION @ LEVEL 1 - AREA A, B & C	5	27-Aug-20	01-Sep-20	23																L1-AREAA, B			+
	NISHES, FIXTURES & TRIMOUT	61	02-Oct-20	19-Dec-20	30								i l											
5268	INSTALL ACT TILE @ LEVEL 1 - AREA A, B & C	5	02-Oct-20	07-Oct-20	0								i					5268 I IN	ISTALL ACT	TILE @ LEVEL	1 AREAA, B	sc		
5278	POLISHED CONCRETE @ LEVEL 1 - AREA A, B & C	9	08-Oct-20	17-Oct-20	5								j					5278 📕	POLISHED	CONCRETE @	LEVEL 1 - ARE	А, В&¢		
5288	INSTALL CASEWORK @ LEVEL 1 - AREA A, B & C	7	19-Oct-20	27-Oct-20	5								i I								LEVEL 1-ARE			
5298	INSTALL MILLWORK @ LEVEL 1 - AREA A, B & C	7	28-Oct-20	04-Nov-20	22																@ LEVEL 1 - AF			
													i				1			1				
VERSION 2	1-May-19			UNC	СНА	RLO	T 7	E SCIEI	NCE E	SUILDI	ING												PAGE	E 9 OF 14
																						UN	CCSB-00C	5-21-19
DATA DATI	E 02-Jan-19					RII	2.0	SCHEDU	ILF													0.1		
						2,1																		

TA	SK ID	TASK	WORK DAYS	START DATE	FINISH DATE	Total Float	J				M								F	M	A	M	J	J	A	;
	5308	INSTALL RESILIENT FLOORING @ LEVEL 1 - AREA A, B & C	8	05-Nov-20	14-Nov-20	22																				
	5318	INSTALL SPECIALTIES @ LEVEL 1 - AREA A, B & C	7	16-Nov-20	24-Nov-20	22											1									
	5328	FINAL PAINT @ LEVEL 1 - AREA A, B & C	8	25-Nov-20	05-Dec-20	22																				
	5338	FINAL POLISHED CONCRETE COAT @ LEVEL 1 - AREA A, B & C	5	07-Dec-20	14-Dec-20	22	11										1									
	9618	INSTALL DOORS & HARDWARE @ LEVEL 1 - AREAA, B & C	7	07-Dec-20	16-Dec-20	33																				
	5348	INSTALL FINAL MEPF DEVICE TRIM OUT @ LEVEL 1 - AREA A, B & C	5	15-Dec-20	19-Dec-20	22																				
	PUNCH 8	REPAIRS	14	21-Dec-20	12-Jan-21	30																				
	5358	BBC CREATE PUNCH LIST @ LEVEL 1 - AREA A, B & C	2	21-Dec-20	22-Dec-20	30																				
	5368	SUBCONTRACTOR - BBC PUNCH COMPLETION @ LEVEL 1 - AREA A, B & C	5	23-Dec-20	04-Jan-21	30																				
	5378	A/E CREATE PUNCH LIST @ LEVEL 1 - AREA A, B & C	2	05-Jan-21	06-Jan-21	30																				
	5388	SUBCONTRACTOR - A/E PUNCH COMPLETION @ LEVEL 1 - AREA A, B & C	5	07-Jan-21	12-Jan-21	30																				
	AREAD	& E	250	17-Feb-20	23-Dec-20	46																				
	WALL FR	AMING, INWALL & OH ROUGH IN	101	17-Feb-20	16-Jun-20	83																				
	6188	INSTALL OH MECHANICAL PIPING @LEVEL1-AREAD & E	5	17-Feb-20	21-Feb-20	162												6188	• II	NSTAL	LOHN	IECHA	NICAL	PIPING	@LEVE	£L
	6178	INSTALL OH DUCTWORK @ LEVEL 1 - AREA D & E	12	17-Feb-20	29-Feb-20	59												6178		INST	ALL OF	IDUCT	NORK	@ LEVE	il 1 - Af	RE
	6168	INSTALL OH PLUMBING @ LEVEL 1 - AREA D & E	7	20-Feb-20	27-Feb-20	174											İ	6168	3 🗖	INSTA	LL OH	PLUME	BING @	LEVEL	1-ARE	ΞA
	6158	INSTALL WALL & SOFFIT FRAMING / TOP OUT @ LEVEL 1 - AREA D & E	8	26-Feb-20	05-Mar-20	79												61	58 🗖	INST	ALL W	ALL &	SOFFI	FRAM	NG / TO	ЭP
	6198	INSTALL OH ELECTRICAL @ LEVEL 1 - AREA D & E	12	28-Feb-20	12-Mar-20	130											i i	61	98 🗖		STALL	OH ELE	CTRIC	AL@L	EVEL 1	- A
	6208	INSTALL OH SPRINKLER @ LEVEL 1 - AREA D & E	10	02-Mar-20	12-Mar-20	162												6	208 🗖		STALL	oh spr	NKLE	R@LE	/EL 1 /	AR
	6248	INSTALL IN-WALL MECHANICAL ROUGH IN @ LEVEL 1 - AREA D & E	5	06-Mar-20	11-Mar-20	97											1	(6248		STALL	N-WAL	L MEC	IANICA	L ROU	GH
	6238	INSTALL IN-WALL PLUMBING ROUGH IN @ LEVEL 1 - AREA D & E	7	06-Mar-20	13-Mar-20	95												6	5238	🗖 IN	STALL	IN-WAL	L PLU	IBING	ROUGH	1 IM
	6258	INSTALL IN-WALL GAS ROUGH IN @ LEVEL 1 - AREA D & E	10	06-Mar-20	17-Mar-20	92											1	6	6258	– 14	ISTALL	. IN-WA	LL GA	S ROUG	H IN @	; LF
	6218	INSTALL OH DATA ROUGH IN @ LEVEL 1 - AREA D & E	5	13-Mar-20	18-Mar-20	157													6218		ISTALI	OHD	ATA RO	UGHIN	@LEV	ÆL
	6228	INSTALL IN-WALL ELECTRICAL ROUGH IN @ LEVEL 1 - AREA D & E	9	26-May-20	04-Jun-20	27											i i				62	228 🗖	INST	ALL IN	WALL	EL
	6268	MEPF IN-WALL INSPECTION (BY A/E) @ LEVEL 1 - AREA D & E	5	05-Jun-20	10-Jun-20	27																6268	ME	PF IN-W	ALL IN	SP
	6288	FOG / BLACK-OUT ABOVE CEILING AREAS @ LEVEL 1 - AREA D & E	5	11-Jun-20	16-Jun-20	27											1					6288	∎ F	OG / BL	ACK-OI	UΤ
	DRYWAL	L, PRIME PAINT & HARD TILE	63	17-Jun-20	02-Sep-20	90																				
	6278	H/T/F DRYWALL WALLS @ LEVEL 1 - AREA D & E	25	17-Jun-20	17-Jul-20	27																6278	3 🗖	н	T/F DR	٢W
	6308	INSTALL CEILING FRAMING @ LEVEL 1 - AREA D & E	11	23-Jun-20	07-Jul-20	78																63	08 🗖			EL
	6338	H/T/F DRYWALL CEILINGS @ LEVEL 1 - AREA D & E	9	08-Jul-20	17-Jul-20	78																	6338	🗖 Н/	T/F DR	٢W
	6398	PRIME & 1ST COAT CEILINGS @ LEVEL 1 - AREA D & E	5	18-Jul-20	23-Jul-20	78																	639	3 🗖 F		<u>&</u> 1
	6298	PRIME & 1ST COAT WALLS @ LEVEL 1 - AREA D & E	14	18-Jul-20	03-Aug-20	27																	629	3 💻	PRIM	Εŧ
	6328	INSTALL ACT GRID @ LEVEL 1 - AREA D & E	10	04-Aug-20	17-Aug-20	27																		6328		ST
	6318	INSTALL HARD TILE @ LEVEL 1 - AREA D & E	13	04-Aug-20	20-Aug-20	101																		6318		IST
	6358	INSTALL IN-GRID ELECTRICAL @ LEVEL 1 - AREA D & E	5	18-Aug-20	22-Aug-20	31																		6358	; 🔳 II	NS
	6368	INSTALL IN-GRID SPRINKLER @ LEVEL 1 - AREA D & E	5	18-Aug-20	22-Aug-20	31																		6368	1 🗉 🛛	NS
	6348	INSTALL IN-GRID MECHANICAL @ LEVEL 1 - AREA D & E	9	18-Aug-20	27-Aug-20	27																		6348	. 🗖	IN
	6388	MEPF IN-GRID INSPECTION @ LEVEL 1 - AREA D & E	5	28-Aug-20	02-Sep-20	27											ĺ							63	88 🗖	N
	FINAL FIN	IISHES, FIXTURES & TRIMOUT	45	08-Oct-20	04-Dec-20	46																				
	6408	INSTALL ACT TILE @ LEVEL 1 - AREA D & E	5	08-Oct-20	13-Oct-20	0																				64
	6418	POLISHED CONCRETE @ LEVEL 1 - AREA D & E	5	14-Oct-20	19-Oct-20	13	11										İ									e
	6428	INSTALL CASEWORK @ LEVEL 1 - AREA D & E	5	20-Oct-20	26-Oct-20	13	11										i									
	6438	INSTALL MILLWORK @ LEVEL 1 - AREA D & E	5	27-Oct-20	31-Oct-20	33											i i									
	6448	INSTALL RESILIENT FLOORING @ LEVEL 1 - AREA D & E	5	02-Nov-20	06-Nov-20	33											Í									
	6458	INSTALL SPECIALTIES @ LEVEL 1 - AREA D & E	5	09-Nov-20	13-Nov-20	33											İ									
	6468	FINAL PAINT @ LEVEL 1 - AREA D & E	5	14-Nov-20	19-Nov-20	33											Ì									
	6478	FINAL POLISHED CONCRETE COAT @ LEVEL 1 - AREA D & E	5	20-Nov-20	28-Nov-20	33											i i									
	9648	INSTALL DOORS & HARDWARE @ LEVEL 1 - AREA D & E	5	20-Nov-20	28-Nov-20	51																				
	6488	INSTALL FINAL MEPF DEVICE TRIM OUT @ LEVEL 1 - AREA D & E	5	30-Nov-20	04-Dec-20	33											1									
	PUNCH 8	REPAIRS	14	05-Dec-20	23-Dec-20	46																				
	6498	BBC CREATE PUNCH LIST @ LEVEL 1 - AREA D & E	2	05-Dec-20	07-Dec-20	46	11										1									
	6508	SUBCONTRACTOR - BBC PUNCH COMPLETION @ LEVEL 1 - AREA D & E	5	08-Dec-20	15-Dec-20	46	11																			
	6518	A/E CREATE PUNCH LIST @ LEVEL 1 - AREA D & E	2	16-Dec-20	17-Dec-20	46	11																			
	6528	SUBCONTRACTOR - A/E PUNCH COMPLETION @ LEVEL 1 - AREA D & E	5	18-Dec-20	23-Dec-20	46	11																			
VE	RSION 21	I-May-19			UNC	CHA	RL	ОТ	TE	SC		CE E	BUI	LDI	NG	;										_
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ELECT	RICAL	ROUG	H IN @	LEVEL	1 - AR	EAD&	E						
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OUT AB	OVE C	EILING	AREA	\$@LE	VEL 1 -	AREA I	0&E						
				l I									
YWAL	L WALL	S@L	EVEL 1		D&E								
EILING	FRAM	ING @	LEVEL	1 - AR	EA D &	E							
YWAL	L CEILI	NGS @	LEVE	L1-AR	READ 8	E							
& 1ST	COAT	EILING	S⊗L	EVEL 1	-ARE	AD&E							
IE & 19	T COA	T WAL	LS@L	EVEL 1	- ARE	AD&E							
ISTALI	ACT	RID @	LEVE	L 1 - AR	READ 8	E							
NSTAL	l hari	TILE	@ LEV	т <mark>е</mark> L 1 - А	REA D	& E							
INSTAL	L IN-G	RID ELI	ECTRI	CAL@	LEVEL	1 - ARE	AD&I	E					
INSTAL	L IN-GI	RID SPI	RINKL	ER@L	EVEL 1	-AREA	D&E						
INSTA	LL IN-C	RID M	ECHAI	NICAL (@ LEVE	L1-A	REA D 8	εE					
MEP	F IN-GF	RID INS	PECTI	ón@L	EVEL '	-ARE/	D&E						
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6408	IN IN	STALL	ACT T	ILE@I	EVEL	1 - ARE	AD&E						
6418	E F	OLISH	ED CC	NCRE	re@l	EVEL 1	AREA	D&E					
642	8 🗖	INSTA	LL CA	SEWOF	RK@L	EVEL 1	-AREA	D&E					
6	438 🗖	INST	ALL M	iLLWO	RK@L	EVEL 1	-ARE4	D&E					
	6448	INS	TALL F	RESILIE	INT FL	ORING	@LE	VEL 1 -	AREA I	D&E			
	6458	I IN	STALL	SPECI	ALTIES	@LEV	EL 1 - A	AREA D	& E				
	6468		INAL	PAINT	@ LEVE	L 1 - AI	REA D a	ε.Ε					
	647	8 🗖	FINA	L POLI	SHED (ONCR	ETE CO	AT @ I	EVEL	1-ARE	AD&E		
	964	8 🗖	INST	ALL DO	ORS 8	HARD	WARE	@ LEVE	L 1 - A	READ	& E		
	6	488	INS	TALL F		EPF DE	VICET	RIM O	л@г	EVEL 1	- AREA	D&E	
	-												
		6498	I BB	CRE	ATE PU	NCH LI	ST@L	EVEL 1	-ARE/	D&E			
		6508	🗖 s	ырсо	NTRAC	TOR - E	BC PU	NCH C	OMPLE	TION @) LEVE	L 1 - AR	EAD
		651	8 I /	A¦∕E CRI	EATE P	UNCH L	IST @	LEVEL	1 - ARE	A D & I	E		
		652	8 🗖	SUBC	ONTRA	CTOR	A/E PL	исн с	OMPLI	TION (@ LEVE	L1-A	READ
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	TASK	WORK	START DATE	FINISH DATE	Total																					
LEVEL 2		DAYS	14-Feb-20	06-Feb-21	Float	╂┧┘┘┘┘				H																╵╷╵╹╵╹╷╹╹╵╹╷╹
		200	02-Mar-20	06-Feb-21	13																					
AREAA	, B & C RAMING, INWALL & OH ROUGH IN	98	02-Mar-20	26-Jun-20	27																					
CECO	INSTALL OH MECHANICAL PIPING @LEVEL2 - AREAA, B & C	18	02-Mar-20	20-5011-20 21-Mar-20	102	11 - 1								6	568					VEL 2 - AREA	AB&C					
6558		21	02-Mar-20	21-War-20 25-Mar-20	59	- 1													Ŭ Ŭ	AREA A, B & C	1					
6548	INSTALL OH DUCTWORK @ LEVEL 2 - AREA A, B & C	21	05-Mar-20	25-War-20 28-Mar-20	96															REAA, B&C						
	INSTALL OH PLUMBING @ LEVEL 2 - AREA A, B & C				85	- 1								i I							- I - i -					
6578	INSTALL OH ELECTRICAL @ LEVEL 2 - AREA A, B & C	21	06-Mar-20	30-Mar-20										1					-	- AREA A B 8	1					
6538	INSTALL WALL & SOFFIT FRAMING / TOP OUT @ LEVEL 2 - AREA A, B & C	11	13-Mar-20	25-Mar-20	73	- 1															- i -	А, В & С				
6588	INSTALL OH SPRINKLER @ LEVEL 2 - AREA A, B & C	19	16-Mar-20	06-Apr-20	89														-	-AREA A, B &	1					
6628	INSTALL IN-WALL MECHANICAL ROUGH IN @ LEVEL 2 - AREA A, B & C	14	19-Mar-20	03-Apr-20	93	4														JGH IN @ LE\	_	-				
6618	INSTALL IN-WALL PLUMBING ROUGH IN @ LEVEL 2 - AREA A, B & C	16	19-Mar-20	06-Apr-20	91															6H IN @ LEVE	1	B&C				
6638	INSTALL IN-WALL GAS ROUGH IN @ LEVEL 2 - AREA A, B & C	17	19-Mar-20	07-Apr-20	90	1														LEVEL 2 - AF	1 1					
6598	INSTALL OH DATA ROUGH IN @ LEVEL 2 - AREA A, B & C	17	23-Mar-20	10-Apr-20	85															VEL 2 - AREA	· 1					
6668	FOG / BLACK-OUT ABOVE CEILING AREAS @ LEVEL 2 - AREA A, B & C	5	11-Apr-20	16-Apr-20	85										666	58 🖬 FOG	G / BLAC	K-OUT AE	OVE CEILIN	GAREAS@L	EVEL 2 - ARE	AA, B&C				
6608	INSTALL IN-WALL ELECTRICAL ROUGH IN @ LEVEL 2 - AREA A, B & C	21	30-May-20	23-Jun-20	16											660	8		L IN-WALL	ELECTRICAL	ROUGH IN @	LEVEL 2 - A	REA A, B 8	C		
6648	MEPF IN-WALL INSPECTION (BY A/E) @ LEVEL 2 - AREA A, B & C	3	24-Jun-20	26-Jun-20	27												6648	I MEPF	IN-WALL IN	SPECTION (B	′A/E)@LEVI	L 2 - AREA A	4, В & С			
DRYWAL	L, PRIME PAINT & HARD TILE	60	27-Jun-20	10-Sep-20	78																					
6658	H/T/F DRYWALL WALLS @ LEVEL 2 - AREA A, B & C	21	27-Jun-20	23-Jul-20	27	1											6658		H/T/F DRYW	ALL WALLS	DEVEL 2-4	REA A, B & (c			
6688	INSTALL CEILING FRAMING @ LEVEL 2 - AREA A, B & C	12	11-Jul-20	24-Jul-20	33	1											6	888 🗖	INSTALL CE	ILING FRAMI	NG @ LEVEL	2 - AREA A, I	в&с			
10024	INSTALL HARD CEILING MECHANICAL ROUGH IN @ LEVEL 2 - AREA A, B & C	10	20-Jul-20	30-Jul-20	33	1											1	0024 🗖	INSTALL F	IARD CEILING	MECHANIC		N@LEVEL	2 - AREA	A, B & C	
10022	INSTALL HARD CEILING SPRINKLER ROUGH IN @ LEVEL 2 - AREA A, B & C	7	23-Jul-20	30-Jul-20	33													10022 🗖	INSTALL H	IARD CEILING	SPRINKLER	ROUGH IN (@ LEVEL 2	AREA A,	B&C	
6678	PRIME & 1ST COAT WALLS @ LEVEL 2 - AREA A, B & C	9	24-Jul-20	03-Aug-20	27													6678 🗖	PRIME &	1ST COAT WA	LLS@LEVE	L 2 - AREA A	, в & с			
10020	INSTALL HARD CEILING ELECTRICAL ROUGH IN @LEVEL 2 - AREA A, B & C	5	25-Jul-20	30-Jul-20	33													10020	INSTALL F	ARD CEILING	ELECTRICA		@LEVEL:		, в & С	
10026	MEPF HARD CEILING INSPECTIONS @ LEVEL 1 - AREA A, B & C	5	31-Jul-20	05-Aug-20	33													10026			NSPECTION	@ LEVEL 1	-AREA A, I	8&C		
6698	INSTALL HARD TILE @ LEVEL 2 - AREA A, B & C	11	04-Aug-20	18-Aug-20	97													6698	INSTA	LL HARD TIL	0 LEVEL 2	AREA A, B	& C			
6708	INSTALL ACT GRID @ LEVEL 2 - AREA A, B & C	14	04-Aug-20	21-Aug-20	27															ALL ACT GRID	T I					
6718	H/T/F DRYWALL CEILINGS @ LEVEL 2 - AREA A, B & C	9	06-Aug-20	18-Aug-20	33															DRYWALL CE						
6758	INSTALL DRYWALL CLOUD CEILINGS @ LEVEL 2 - AREA A, B & C	11	19-Aug-20	31-Aug-20	33															TALL DRYWA					8 C	
6748	INSTALL IN-GRID SPRINKLER @ LEVEL 2 - AREA A, B & C	5	22-Aug-20	27-Aug-20	29	-														TALL IN-GRID						
6738		6	22-Aug-20	27-Aug-20 28-Aug-20	23	- 1														TALL IN-GRID		-				
	INSTALL IN-GRID ELECTRICAL @ LEVEL 2 - AREA A, B & C			-	20					_				_						TALL IN-GRID		-				
6728	INSTALL IN-GRID MECHANICAL @ LEVEL 2 - AREA A, B & C	7	22-Aug-20	29-Aug-20		- 1															i i	T I				
6768	MEPF IN-GRID INSPECTION @ LEVEL 2 - AREA A, B & C	8	31-Aug-20	09-Sep-20	27																	-				
6778	PRIME & 1ST COAT CEILINGS @ LEVEL 2 - AREA A, B & C	8	01-Sep-20	10-Sep-20	33															PRIME & 1ST		55 @ LEVEL	. 2 - AREA A	B&C		
	NISHES, FIXTURES & TRIMOUT	73	14-Oct-20	21-Jan-21	13																					
6788	INSTALL ACT TILE @ LEVEL 2 - AREA A, B & C	7	14-Oct-20	21-Oct-20	0	1														88 🔳 INST.	_	0			-	
6798	POLISHED CONCRETE @ LEVEL 2 - AREA A, B & C	9	22-Oct-20	02-Nov-20	0															6798 💻 PC		· · ·		1 1		
6808	INSTALL CASEWORK @ LEVEL 2 - AREA A, B & C	12	03-Nov-20	17-Nov-20	0																			1 1		
6818	INSTALL MILLWORK @ LEVEL 2 - AREA A, B & C	10	18-Nov-20	02-Dec-20	0																INSTALI		-			
6828	INSTALL RESILIENT FLOORING @ LEVEL 2 - AREA A, B & C	8	03-Dec-20	14-Dec-20	0																			1 1		
6838	INSTALL SPECIALTIES @ LEVEL 2 - AREA A, B & C	6	15-Dec-20	21-Dec-20	0																	ALL SPECIA				&C
6848	FINAL PAINT @ LEVEL 2 - AREA A, B & C	11	22-Dec-20	09-Jan-21	0	1															5848 💻	FINAL PAIN	r@Level	2-AREA	A, B & C	
6858	FINAL POLISHED CONCRETE COAT @ LEVEL 2 - AREA A, B & C	5	11-Jan-21	15-Jan-21	0																6858	FINAL POL	ISHED CO	NCRETEC	COAT @ LI	EVEL 2 - AREA A, B
9658	INSTALL DOORS & HARDWARE @ LEVEL 2 - AREAA, B & C	8	11-Jan-21	19-Jan-21	15																9658	INSTALL I	DOORS & I	ARDWAR	RE@LEVE	EL 2 - AREAA, B & 0
6868	INSTALL FINAL MEPF DEVICE TRIM OUT @ LEVEL 2 - AREA A, B & C	5	16-Jan-21	21-Jan-21	0																6868	INSTALL	FINAL ME	PF DEVICE	TRIM OU	T@LEVEL2-ARE
PUNCH	& REPAIRS	14	22-Jan-21	06-Feb-21	13																					
6878	BBC CREATE PUNCH LIST @ LEVEL 2 - AREA A, B & C	2	22-Jan-21	23-Jan-21	13																6878	I BBC CRE		H LIST @	LEVEL 2 -	AREA A, B & C
6888	SUBCONTRACTOR - BBC PUNCH COMPLETION @ LEVEL 2 - AREA A, B & C	5	25-Jan-21	29-Jan-21	13																6888	SUBCO	NTRACTO	R - BBC P	UNCH CO	MPLETION @ LEVE
6898	A/E CREATE PUNCH LIST @ LEVEL 2 - AREA A, B & C	2	30-Jan-21	01-Feb-21	13	11															6898	A/ECR	EATEPUN	CH LIST @	LEVEL 2	-AREAA, B&C
6908	SUBCONTRACTOR - A/E PUNCH COMPLETION @ LEVEL 2 - AREA A, B & C	5	02-Feb-21	06-Feb-21	13	1															690	3 🛯 SUBC	ONTRACT	QR - A/E P	инсн со	MPLETION @ LEV
AREA D	&E	282	14-Feb-20	03-Feb-21	21																					
	RAMING, INWALL & OH ROUGH IN	113	14-Feb-20	27-Jun-20	70																					
7708	INSTALL OH MECHANICAL PIPING @LEVEL 2 - AREA D & E	10	14-Feb-20	25-Feb-20	159	11								7708					@LEVEL2	- AREA D & E						
7678	INSTALL WALL & SOFFIT FRAMING / TOP OUT @ LEVEL 2 - AREA D & E	12	26-Mar-20	08-Apr-20	73	11									7678			L & SOFF	T FRAMING	/тороџт@	LEVEL 2-A	READ & E				
7698	INSTALL OH DUCTWORK @ LEVEL 2 - AREA D & E	15	26-Mar-20	11-Apr-20	59											1 1				2-AREA D&						
													I I	_,												
ERSION 2	1-May-19			UNC	CHA	ARLO	DTTE	SC	IENC	EB	JIL	DING													P	AGE 11 OF 14
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ATA DATE	E 02-Jan-19					R	D SC	HF	DULE															-		
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TASK ID	TASK	WORK DAYS	START DATE	FINISH DATE	Total Float					J A S O N D J F M A M J J A S O N D 		
7688	INSTALL OH PLUMBING @ LEVEL 2 - AREA D & E	18	30-Mar-20	18-Apr-20	127	T				7688 🧰 INSTALL OH PLUMBING @ LEVEL 2 - AREA D & E		
7758	INSTALL IN-WALL PLUMBING ROUGH IN @ LEVEL 2 - AREA D & E	11	01-Apr-20	13-Apr-20	101					7758 🔲 INSTALL IN-WALL PLUMBING ROUGH IN @ LEVEL 2 - AREA	D&E	
7778	INSTALL IN-WALL GAS ROUGH IN @ LEVEL 2 - AREA D & E	15	01-Apr-20	17-Apr-20	97					7778 III INSTALL IN-WALL GAS ROUGH IN @ LEVEL 2 - AREA D & E		
7768	INSTALL IN-WALL MECHANICAL ROUGH IN @ LEVEL 2 - AREA D & E	18	01-Apr-20	21-Apr-20	94					7768 INSTALL IN-WALL MECHANICAL ROUGH IN @ LEVEL 2 4	REA D & E	
7718	INSTALL OH ELECTRICAL @ LEVEL 2 - AREA D & E	12	04-Apr-20	17-Apr-20	99					7718 🔲 INSTALL OH ELECTRICAL @ LEVEL 2 - AREA D & E		
7728	INSTALL OH SPRINKLER @ LEVEL 2 - AREA D & E	7	10-Apr-20	17-Apr-20	128					7728 🔳 INSTALL OH SPRINKLER @ LEVEL 2 - AREA D & E		
7738	INSTALL OH DATA ROUGH IN @ LEVEL 2 - AREA D & E	5	18-Apr-20	23-Apr-20	123	-				7738 III INSTALL OH DATA ROUGH N @ LEVEL 2 - AREAD & E		——
7748	INSTALL IN-WALL ELECTRICAL ROUGH IN @ LEVEL 2 - AREA D & E	10	05-Jun-20	16-Jun-20	49					7748 🔲 INSTALL IN-WALL ELECTRICAL ROUGH IN @	LEVEL 2 - AREAD & E	
7788	MEPF IN-WALL INSPECTION (BY A/E) @ LEVEL 2 - AREA D & E	5	17-Jun-20	22-Jun-20	49					7788 MEPF IN-WALL INSPECTION (BY A/E) @ LEV		
7808	FOG / BLACK-OUT ABOVE CELLING AREAS @ LEVEL 2 - AREA D & E	5	23-Jun-20	27-Jun-20	49	1				7808 D FOG /BLACK-OUT ABOVE CELLING AREAS		
	L, PRIME PAINT & HARD TILE	41	29-Jun-20	19-Aug-20	43	1						
		8	29-Jun-20	09-Jul-20	49	 				7798 H/T//F DRYWALL WALLS @ LEVEL 2 - AR		
7798	H/T/F DRYWALL WALLS @ LEVEL 2 - AREA D & E	5		11-Jul-20	65	1				7828 III INSTALL CEILING FRAMING @ LEVEL 2		
7828	INSTALL CEILING FRAMING @ LEVEL 2 - AREA D & E		07-Jul-20									
7818	PRIME & 1ST COAT WALLS @ LEVEL 2 - AREA D & E	7	10-Jul-20	17-Jul-20	49					7818 PRIME & 1ST CDAT WALLS @ LEVEL 2		
7858	H/T/F DRYWALL CEILINGS @ LEVEL 2 - AREA D & E	7	13-Jul-20	20-Jul-20	65					7858 H/T/F DRYWALL CEILINGS @ LEVEL 2		
7838	INSTALL HARD TILE @ LEVEL 2 - AREA D & E	5	18-Jul-20	23-Jul-20	119					7838 🔳 INSTALL HARD TILE @ LEVEL 2 - AR		
7848	INSTALL ACT GRID @ LEVEL 2 - AREA D & E	5	18-Jul-20	23-Jul-20	49					7848 🔳 INSTALL ACT GRID @ LEVEL 2 - ARE		
7898	INSTALL DRYWALL CLOUD CEILINGS @ LEVEL 2 - AREA D & E	11	21-Jul-20	01-Aug-20	65	1				7898 MINSTALL DRYWALL CLOUD C HLIN	T	
7868	INSTALL IN-GRID MECHANICAL @ LEVEL 2 - AREA D & E	8	24-Jul-20	01-Aug-20	52					7868 🖬 INSTALL IN-GRID MECHANICAL @	LEVEL 2 - AREA D & E	
7888	INSTALL IN-GRID SPRINKLER @ LEVEL 2 - AREA D & E	10	24-Jul-20	04-Aug-20	50					7888 📫 INSTALL IN-GRID \$PRINKLER @ L	EVEL 2 - AREA D & E	
7878	INSTALL IN-GRID ELECTRICAL @ LEVEL 2 - AREA D & E	11	24-Jul-20	05-Aug-20	49					7878 📫 INSTALL IN-GRID ELECTRICAL @	LEVEL 2 - AREA D & E	
7918	PRIME & 1ST COAT CEILINGS @ LEVEL 2 - AREA D & E	10	03-Aug-20	13-Aug-20	65					7918 PRIME & IST COAT CELLINGS @	LEVEL 2 - AREA D & E	
7908	MEPF IN-GRID INSPECTION @ LEVEL 2 - AREA D & E	10	06-Aug-20	19-Aug-20	49					7908 🗖 MEPF IN-GRID INSPECTION @	LEVEL 2 - AREA D & E	
FINAL FI	NISHES, FIXTURES & TRIMOUT	65	20-Oct-20	18-Jan-21	21							
7928	INSTALL ACT TILE @ LEVEL 2 - AREA D & E	10	20-Oct-20	31-Oct-20	0					7928 💻 INSTALLACT	TILE @ LEVEL 2 - AREA D & E	
7938	POLISHED CONCRETE @ LEVEL 2 - AREA D & E	5	02-Nov-20	06-Nov-20	3					7938 D POLISHED ^I C	ONCRETE @ LEVEL 2 - AREA D & E	
7948	INSTALL CASEWORK @ LEVEL 2 - AREA D & E	8	09-Nov-20	17-Nov-20	3	<u> </u>				7948 🔳 INSTALL C	CASEWORK @ LEVEL 2 - AREA D & E	
7958	INSTALL MILLWORK @ LEVEL 2 - AREA D & E	7	18-Nov-20	28-Nov-20	3	1				7958 🔲 INSTAL	L MILLWORK @ LEVEL 2 - AREA D & E	
7968	INSTALL RESILIENT FLOORING @ LEVEL 2 - AREA D & E	7	30-Nov-20	07-Dec-20	3	<u> </u>					ALL RESILIENT FLOORING @ LEVEL 2 AREA D & E	
7978	INSTALL SPECIALTIES @ LEVEL 2 - AREA D & E	9	08-Dec-20	19-Dec-20	3						STALL SPECIALTIES @ LEVEL 2 -AREA D & E	
7988	FINAL PAINT @ LEVEL 2 - AREA D & E	9	21-Dec-20	06-Jan-21	3						FINAL PAINT @ LEVEL 2 - AREA D & E	
7998	FINAL PAINT @ LEVEL 2 - AREA D & L FINAL POLISHED CONCRETE COAT @ LEVEL 2 - AREA D & E	5	07-Jan-21	12-Jan-21	3	+					FINAL POLISHED CONCRETE COAT @ LEVEL 2 - AREA	
					26						INSTALL DOORS & HARDWARE @ LEVEL 2- AREA D &	
9688	INSTALL DOORS & HARDWARE @ LEVEL 2 - AREA D & E	5	07-Jan-21	12-Jan-21	-							
8008	INSTALL FINAL MEPF DEVICE TRIM OUT @ LEVEL 2 - AREA D & E	5	13-Jan-21	18-Jan-21	3						INSTALL FINAL MEPF DEVICE TRIM OUT @ LEVEL 2 -	
		14	19-Jan-21	03-Feb-21	21							
8018	BBC CREATE PUNCH LIST @ LEVEL 2 - AREA D & E	2	19-Jan-21	20-Jan-21	21						BBC CREATE PUNCH LIST @ LEVEL 2 - AREA D & E	
8028	SUBCONTRACTOR - BBC PUNCH COMPLETION @ LEVEL 2 - AREA D & E	5	21-Jan-21	26-Jan-21	21	1						
8038	A/E CREATE PUNCH LIST @ LEVEL 2 - AREA D & E	2	27-Jan-21	28-Jan-21	21						8 I A/E CREATE PUNCH LIST @ LEVEL 2 - AREA D & E	
8048	SUBCONTRACTOR - A/E PUNCH COMPLETION @ LEVEL 2 - AREA D & E	5	29-Jan-21	03-Feb-21	21						18 SUBCONTRACTOR - A/E PUNCH COMPLETION @	LEVEL :
LEVEL 3	·	247	13-Apr-20	20-Feb-21	6							
AREAA	, B & C	247	13-Apr-20	20-Feb-21	6							
WALL F	RAMING, INWALL & OH ROUGH IN	83	13-Apr-20	23-Jul-20	16							
10036	INSTALL OH MECHANICAL PIPING @LEVEL 3 - AREA A, B & C	18	13-Apr-20	02-May-20	76	1				10036 III INSTALL OH MECHANICAL PIPING @LEVEL 3 - AREA A	,B&C	
10038	INSTALL OH DUCTWORK @ LEVEL 3 - AREA A, B & C	21	13-Apr-20	06-May-20	59	1				10038 INSTALL OH DUCTWORK @ LEVEL 3 -AREA A, B & ¢		
10042	INSTALL OH PLUMBING @ LEVEL 3 - AREA A, B & C	21	16-Apr-20	12-May-20	70	1				10042 III INSTALL OH PLUMBING @ LEVEL 3 -AREA A, B & C		
10044	INSTALL OH ELECTRICAL @ LEVEL 3 - AREA A, B & C	21	17-Apr-20	13-May-20	59	1				10044 INSTALL OH ELECTRICAL @ LEVEL 3 - AREA A, B & C	, , , , , , , , , , ,	
10048	INSTALL WALL & SOFFIT FRAMING / TOP OUT @ LEVEL 3 - AREA A, B & C	11	24-Apr-20	06-May-20	60					10048 📫 INSTALL WALL & SOFFIT FRAMING / TOP OUT @ LEV	EL 3 AREA A, B & C	+-
10052	INSTALL OH SPRINKLER @ LEVEL 3 - AREA A, B & C	19	27-Apr-20	20-May-20	63					10052 INSTALL OH SPRINKLER @ LEVEL 3 - AREA A, B &	3 C	
10058	INSTALL IN-WALL MECHANICAL ROUGH IN @ LEVEL 3 - AREA A, B & C	14	30-Apr-20	18-May-20	67	1				10058 INSTALL IN-WALL MECHANICAL ROUGH IN @ LEVE	L3-AREAA, B & C	
10062	INSTALL IN-WALL PLUMBING ROUGH IN @ LEVEL 3 - AREA A, B & C	16	30-Apr-20	20-May-20	65					10062 INSTALL IN-WALL PLUMBING ROUGH IN @ LEVEL		
10064	INSTALL IN-WALL GAS ROUGH IN @ LEVEL 3 -AREA A, B & C	17	30-Apr-20	21-May-20	64					10064 INSTALL IN-WALL GAS ROUGH IN @ LEVEL 3 - ARE		
10070	INSTALL OH DATA ROUGH IN @ LEVEL 3 - AREA A, B & C	17	04-May-20	26-May-20	59	1				10070 III INSTALL OH PATA ROUGH IN @ LEVEL 3 - AREA A		+-
10074	FOG / BLACK-OUT ABOVE CELLING AREAS @ LEVEL 3 - AREA A, B & C	5	27-May-20	01-Jun-20	59	1				10074 FOG / BLACK-OUT ABOVE CELLING AREAS @LE		
10074	INSTALL IN-WALL ELECTRICAL ROUGH IN @ LEVEL 3 - AREA A, B & C	21	24-Jun-20	20-Jul-20	16	1						
10000		21	2-+-5011-20	20-041-20	10	1						
VERSION 2	1-May-19			UNC	СНА	RLC	OTTE	SCIE	NCE I	BUILDING	PAGE 12 O	
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TASK ID	TASK	WORK	START DATE	FINISH DATE								DJF											M	J J	J A	S O
10076	MEPF IN-WALL INSPECTION (BY A/E) @ LEVEL 3 - AREA A, B & C	DAYS 3	21-Jul-20	23-Jul-20	Float 16	╉╅┵┵┵┿┵		┼┵┹╇┙						┱┹┹┹┱								- AREA A, E				
DRYWAL	L, PRIME PAINT & HARD TILE	60	24-Jul-20	07-Oct-20	75																-					
10080	H/T/F DRYWALL WALLS @ LEVEL 3 - AREA A, B & C	21	24-Jul-20	19-Aug-20	16											0080	-	/T/F DRYV	VALL WALL	LS@LEVE	EL 3 - ARE	AA, B&C	_			
10086	INSTALL CEILING FRAMING @ LEVEL 3 - AREA A, B & C	12	05-Aug-20	20-Aug-20	30											10086		NSTALL C	EILING FRA	AMING @ I	LEVEL 3 -	AREA A, B &	¥C			
10092	INSTALL HARD CEILING MECHANICAL ROUGH IN @ LEVEL 3 - AREA A, B & C	10	13-Aug-20	26-Aug-20	30											1009								- AREA A.	вас	
10098	INSTALL HARD CEILING SPRINKLER ROUGH IN @ LEVEL 3 -AREA A, B & C	7	19-Aug-20	26-Aug-20	30											100						UGH IN @ I	-			
10102	PRIME & 1ST COAT WALLS @ LEVEL 3 - AREA A, B & C	9	20-Aug-20	29-Aug-20	16																	AREAA, B				
10102	INSTALL HARD CEILING ELECTRICAL ROUGH IN @LEVEL 3 - AREA A, B & C	5	20-Aug-20 21-Aug-20	25-Aug-20 26-Aug-20	30																	OUGH IN @			28.0	
10104	MEPF HARD CEILING INSPECTIONS @ LEVEL 1 - AREAA, B & C	5		20-Aug-20 01-Sep-20	30	-11														i		LEVEL 1 - A			340	
			27-Aug-20	· ·	94							I								i i	-	REAA, B&C				
10114	INSTALL HARD TILE @ LEVEL 3 -AREA A, B & C	11	31-Aug-20	14-Sep-20																Ĩ						
10116	INSTALL ACT GRID @ LEVEL 3 - AREA A, B & C	14	31-Aug-20	17-Sep-20	16							I I								-		EAA, B & C				
10120	H/T/F DRYWALL CEILINGS @ LEVEL 3 - AREA A, B & C	9	02-Sep-20	14-Sep-20	30																-	3-AREAA			_	
10124	INSTALL DRYWALL CLOUD CEILINGS @ LEVEL 3 - AREA A, B & C	11	15-Sep-20	28-Sep-20	30															1		INGS@LE			C I	
10126	INSTALL IN-GRID SPRINKLER @ LEVEL 3 - AREA A, B & C	5	18-Sep-20	23-Sep-20	18												1012				-	EVEL 3 - AR				
10128	INSTALL IN-GRID ELECTRICAL @ LEVEL 3 - AREA A, B & C	6	18-Sep-20	24-Sep-20	17												1012			1	-	LEVEL 3 - A				
10130	INSTALL IN-GRID MECHANICAL @ LEVEL 3 - AREA A, B & C	7	18-Sep-20	25-Sep-20	16												1013					DEVEL 3 -	í í			
10132	MEPF IN-GRID INSPECTION @ LEVEL 3 - AREA A, B & C	8	28-Sep-20	06-Oct-20	16							1					10	132	MEPF IN-GF		CTION @	LEVEL 3 - A	REAA, B&	C		
10134	PRIME & 1ST COAT CEILINGS @ LEVEL 3 - AREA A, B & C	8	29-Sep-20	07-Oct-20	30			[10	134 🗖	PRIME & 15		CEILINGS	@ LEVEL 3 ·	AREA A, E	3 & C		1
FINAL FI	NISHES, FIXTURES & TRIMOUT	75	27-Oct-20	04-Feb-21	6																					
10136	INSTALL ACT TILE @ LEVEL 3 - AREA A, B & C	7	27-Oct-20	03-Nov-20	0													10136	inst/	ALL ACT T	TILE @ LE	VEL 3 - ARE	A A, B & C			
10138	POLISHED CONCRETE @ LEVEL 3 - AREA A, B & C	9	04-Nov-20	14-Nov-20	8	1												1013	38 💻 PC	OLISHED C	CONCRET	E @ LEVEL :	3 - AREA A,	B&C		
10142	INSTALL CASEWORK @ LEVEL 3 - AREA A, B & C	12	18-Nov-20	04-Dec-20	6							1						1	0142 💻	INSTALI	L CASEWO	ORK@LEV	EL 3-ARE	4 A, B & C	:	
10148	INSTALL MILLWORK @ LEVEL 3 - AREA A, B & C	10	05-Dec-20	18-Dec-20	6														10148	INST.	ALL MILL	WORK@L	EVEL 3 - AF	REA A, B 8	¥ C	
10154	INSTALL RESILIENT FLOORING @ LEVEL 3 - AREA A, B & C	8	19-Dec-20	04-Jan-21	6														10154	4 📫 1	NSTALL R	ESILIENT F	LOORING	@ LEVEL	3-AREA A,	B&C
10158	INSTALL SPECIALTIES @ LEVEL 3 - AREA A, B & C	6	05-Jan-21	11-Jan-21	6														10	0158 📕	INSTALL	SPECIALTI	ES@LEVE	L 3 - AREA	A A, B & C	
10160	FINAL PAINT @ LEVEL 3 - AREA A, B & C	11	12-Jan-21	23-Jan-21	6															10160	FINAL	PAINT @ L	EVEL 3 - AF	REA A, B 8	4C	
10168	FINAL POLISHED CONCRETE COAT @ LEVEL 3 - AREA A, B & C	5	25-Jan-21	29-Jan-21	6															10168	FINA	L POLISHE	D CONCRE	ТЕ СФАТ	@ LEVEL 3	- AREA A, E
10170	INSTALL DOORS & HARDWARE @ LEVEL 3 - AREAA, B & C	8	25-Jan-21	02-Feb-21	8															10170		TALL DOOR	S & HARD	WARE @ L	LEVEL 3 - AI	REAA, B &
10174	INSTALL FINAL MEPF DEVICE TRIM OUT @ LEVEL 3 - AREA A, B & C	5	30-Jan-21	04-Feb-21	6															10174		TALL FINAL	MEPF DE			VEL 3 - ARI
PUNCH	REPAIRS	14	05-Feb-21	20-Feb-21	6																					
10178	BBC CREATE PUNCH LIST @ LEVEL 3 - AREA A, B & C	2	05-Feb-21	06-Feb-21	6	11 1														1017	78 I BB	C CREATE I	PUNCH LIS		L 3-AREA	АВ&С
10182	SUBCONTRACTOR - BBC PUNCH COMPLETION @ LEVEL 3 - AREA A, B & C	5	08-Feb-21	12-Feb-21	6															101	82 S	UBCONTRA	CTOR - BE			ION @ LEV
10186	A/E CREATE PUNCH LIST @ LEVEL 3 - AREA A, B & C	2	13-Feb-21	15-Feb-21	6																	VE CREATE				
10190	SUBCONTRACTOR - A/E PUNCH COMPLETION @ LEVEL 3 - AREA A, B & C	5	16-Feb-21	20-Feb-21	6															i i		SUBCONT		-		
AREA D		221	07-May-20	15-Feb-21	- 11																					
	AMING, INWALL & OH ROUGH IN	52	07-May-20	11-Jul-20	78																					
10028	INSTALL OH MECHANICAL PIPING @LEVEL 3 - AREA D & E	10	07-May-20	20-May-20	120	11 I.								10028			VECHAN		NG@LEVE	FL 3 - AREA	AD&F					
10050	INSTALL WALL & SOFFIT FRAMING / TOP OUT @ LEVEL 3 - AREA D & E	10	07-May-20	22-May-20	68																	RFAD&F				
10030	INSTALL OF DUCTWORK @ LEVEL 3 -AREA D & E	15	07-May-20	27-May-20	63									1 1					EVEL 3 - AR	T						
10030	INSTALL OF PLUMBING @ LEVEL 3 - AREA D & E	13	13-May-20	03-Jun-20	109									10032					EVEL 3-AR	1						
10052	INSTALL OF FLOWDING @ LEVEL 3 - AKEY D & L INSTALL IN-WALL PLUMBING ROUGH IN @ LEVEL 3 - AREA D & E	11	-	28-May-20	75									10056					ROUGHIN							
			15-May-20	-																						
10060	INSTALL IN-WALL GAS ROUGH IN @ LEVEL 3 - AREA D & E	15	15-May-20	02-Jun-20	71									10060					GH IN @ LE							
10066	INSTALL IN-WALL MECHANICAL ROUGH IN @ LEVEL 3 - AREA D & E	18	15-May-20	05-Jun-20	68									10066						Т						
10034	INSTALL OH ELECTRICAL @ LEVEL 3 - AREA D & E	12	19-May-20	02-Jun-20	63									1003				_		1						
10040	INSTALL OH SPRINKLER @ LEVEL 3 - AREA D & E	7	26-May-20	02-Jun-20	110									1 1				-	EVEL 3 - AF	1						
10046	INSTALL OH DATA ROUGH IN @ LEVEL 3 - AREA D & E	5	03-Jun-20	08-Jun-20	105									10						1						
10054	INSTALL IN-WALL ELECTRICAL ROUGH IN @ LEVEL 3 - AREA D & E	10	17-Jun-20	27-Jun-20	49								_							1	-	- AREA D 8	. E			
10072	MEPF IN-WALL INSPECTION (BY A/E) @ LEVEL 3 - AREA D & E	5	29-Jun-20	06-Jul-20	49														ECTION (BY							
10078	FOG / BLACK-OUT ABOVE CELLING AREAS @ LEVEL 3 - AREA D & E	5	07-Jul-20	11-Jul-20	49										1007	8 🛛 F	JG / BL	ACK-OUT	ABOVE CEL		AS@LEV	EL 3-AREA	D&E			
DRYWAL	L, PRIME PAINT & HARD TILE	41	13-Jul-20	31-Aug-20	106																					
10082	H/T/F DRYWALL WALLS @ LEVEL 3 - AREA D & E	8	13-Jul-20	21-Jul-20	49														VALLS@LI							
10084	INSTALL CEILING FRAMING @ LEVEL 3 - AREA D & E	5	18-Jul-20	23-Jul-20	73														FRAMING	-						
10088	PRIME & 1ST COAT WALLS @ LEVEL 3 - AREA D & E	7	22-Jul-20	29-Jul-20	49														DAT WALLS	-						
10090	H/T/F DRYWALL CEILINGS @ LEVEL 3 - AREA D & E	7	24-Jul-20	31-Jul-20	73										·	0090	H/T/F	DRYWALI	L CEILINGS	@ LEVEL	3-AREA	D&E				
	1 May 10			1110	<u></u>		TT-	00		ייחו														F	PAGE 13	OF 14
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TASK ID	TASK	WORK	START DATE	FINISH DATE																			FMA			
10094		DAYS	20 Jul 20	04 Aug 20	Float 127												100	1 INST								диции
10094	INSTALL HARD TILE @ LEVEL 3 -AREA D & E	5	30-Jul-20	04-Aug-20														11131 16 🖬 INST			-	1				
10096	INSTALL ACT GRID @ LEVEL 3 - AREAD & E	5	30-Jul-20	04-Aug-20	49																-			。_		
10100	INSTALL DRYWALL CLOUD CELINGS @ LEVEL 3 - AREA D & E	11	01-Aug-20	13-Aug-20	73																		S @ LEVEL 3 - AREAD	& E		<u> </u> '
10106	INSTALL IN-GRID MECHANICAL @ LEVEL 3 - AREA D & E	8	05-Aug-20	13-Aug-20	52																	-	EVEL 3 - AREA D & E			
10108	INSTALL IN-GRID SPRINKLER @ LEVEL 3 - AREA D & E	10	05-Aug-20	18-Aug-20	50																					
10110	INSTALL IN-GRID ELECTRICAL @ LEVEL 3 - AREA D & E	11	05-Aug-20	19-Aug-20	49																		LEVEL 3 - AREA D & E			
10118	PRIME & 1ST COAT CEILINGS @ LEVEL 3 - AREA D & E	10	17-Aug-20	27-Aug-20	73																		LEVEL 3 - AREA D & E			
10122	MEPF IN-GRID INSPECTION @ LEVEL 3 - AREA D & E	10	20-Aug-20	31-Aug-20	49								1					10122	MEPF	N-GRID	INSPE	CTION @ L	EVEL 3-AREA D & E			
FINAL FI	NISHES, FIXTURES & TRIMOUT	65	02-Nov-20	29-Jan-21	11																					
10140	INSTALL ACT TILE @ LEVEL 3 - AREA D & E	10	02-Nov-20	13-Nov-20	0																	- i	TILE @ LEVEL 3 - AREA [
10144	POLISHED CONCRETE @ LEVEL 3 - AREA D & E	5	14-Nov-20	19-Nov-20	11																	1	ONCRETE @ LEVEL 3 - A			
10146	INSTALL CASEWORK @ LEVEL 3 - AREA D & E	8	20-Nov-20	02-Dec-20	11															10146	-	INSTALL C	ASEWORK @ LEVEL 3 -	AREA D & E		
10150	INSTALL MILLWORK @ LEVEL 3 - AREA D & E	7	03-Dec-20	10-Dec-20	11															1015	50	I INSTALL	MILLWORK @ LEVEL 3	-AREAD&E		
10152	INSTALL RESILIENT FLOORING @ LEVEL 3 - AREA D & E	7	14-Dec-20	21-Dec-20	11															10	0152	INSTA	LL RESILIENT FLOORIN	G @ LEVEL 3 - A	AREA D &	E
10156	INSTALL SPECIALTIES @ LEVEL 3 - AREA D & E	9	22-Dec-20	07-Jan-21	11																10156		STALL SPECIALTIES @ I	EVEL 3 - AREA	D&E	
10162	FINAL PAINT @ LEVEL 3 - AREA D & E	9	08-Jan-21	18-Jan-21	11																10	0162 🛉 💻	FINAL PAINT @ LEVEL :	B-AREA D & E		
10164	FINAL POLISHED CONCRETE COAT @ LEVEL 3 - AREA D & E	5	19-Jan-21	23-Jan-21	11	11																10164	FINAL POLISHED CON	CRETE COAT @	EVEL 3	AREA D & F
10166	INSTALL DOORS & HARDWARE @ LEVEL 3 - AREA D & E	5	19-Jan-21	23-Jan-21	16																	10166	INSTALL DOORS & HA	RDWARE @ LEV	/EL 3 - AR	EAD&E
10172	INSTALL FINAL MEPF DEVICE TRIM OUT @ LEVEL 3 - AREA D & E	5	25-Jan-21	29-Jan-21	11																	10172	INSTALL FINAL MEPI	DEVICE TRIM	OUT@LE	VEL 3 - ARE
PUNCH	& REPAIRS	14	30-Jan-21	15-Feb-21	11																	i				
10176	BBC CREATE PUNCH LIST @ LEVEL 3 - AREA D & E	2	30-Jan-21	01-Feb-21	11																	10176	BBC CREATE PUNCH	I LIST @ LEVEL	3 AREA	D&E
10180	SUBCONTRACTOR - BBC PUNCH COMPLETION @ LEVEL 3 - AREA D & E	5	02-Feb-21	06-Feb-21	11																	10180		- BBC PUNCH C	OMPLET	ION @ LEVE
10184	A/E CREATE PUNCH LIST @ LEVEL 3 - AREA D & E	2	08-Feb-21	09-Feb-21	11																	10184	I A/E CREATE PUNC	H LIST @ LEVEI	3-AREA	D&E
10188	SUBCONTRACTOR - A/E PUNCH COMPLETION @ LEVEL 3 - AREA D & E	5	10-Feb-21	15-Feb-21	11																	10188		R - A/E PUNCH	COMPLET	ION@LEVF
	PENTHOUSE	159	26-Feb-20	05-Sep-20	0																					
		159	26-Feb-20	05-Sep-20	0																	1				
		159	26-Feb-20	05-Sep-20	0																					
1858	SET LARGE EQUIPMENT WITH CRANE @ PENTHOUSE	5	26-Feb-20	02-Mar-20	4									1858	SET LARG			TH CRANE		IOUSE		1				
1848	SET & INSTALL MECHANICAL EQUIPMENT @ PENTHOUSE	21	10-Apr-20	04-May-20	33													L MECHAN	-		IT @ P	ENTHOUSE				<u>+</u> '
9748	SET & INSTALL ELECTRICAL EQUIPMENT @ PENTHOUSE	14	28-Apr-20	15-May-20	0													ALL ELECT			-					
1718	INSTALL ELECTRICAL ROUGH IN @ PENTHOUSE	21	16-May-20	10-Jun-20	0													ALL ELECTR			E F					
1728	PULL FEEDERS @ PENTHOUSE	4	11-Jun-20	15-Jun-20	0													L FEEDERS			-					
1720		21	16-Jun-20	11-Jul-20	0											1738			-				2) PENTHOUSE			
			06-Jul-20	29-Jul-20	0																		N @ PENTHOUSE			<u> '</u>
1748	INSTALL MECHANICAL DUCT ROUGH IN @ PENTHOUSE	21																					_			
3298	INSTALL PLUMBING ROUGH IN (NON-PURE WATER) @ PENTHOUSE	21	17-Jul-20	10-Aug-20	0												3298					1	N-PURE WATER) @ PENT	HOUSE		
3308	INSTALL PURE WATER ROUGH IN @ PENTHOUSE	21	11-Aug-20	05-Sep-20	0													3308				ERROUGH	I IN @ PENTHOUSE			
INTERIC		60	23-Jul-20	06-Oct-20	108																	1				
VERTIC	AL TRANSPORTATION	60	23-Jul-20	06-Oct-20	108																					
		60	23-Jul-20	06-Oct-20	108																	 		_		
1430	INSTALL SERVICE ELEVATOR FOR TEMPUSE @ SCIENCE	30	23-Jul-20	28-Aug-20	77												1430						OR TEMPUSE @ SCIENC			
1410	INSTALL BALANCE OF ELEVATORS @ SCIENCE	30	29-Aug-20	06-Oct-20	108													1410		INSTAL	LL BA		ELEVATORS @ SCIENCI			
FINISH	SITE WORK	121	02-Jul-20	03-Dec-20	83																					
		121	02-Jul-20	03-Dec-20	83								1									I I				
		121	02-Jul-20	03-Dec-20	83								+ +			+ +										
		121	02-Jul-20	03-Dec-20	83																	I				
1458	FORM & POUR SITE STAIRS @ SITE	12	02-Jul-20	17-Jul-20	124	1										1	1458	FORM &	POURS	TE STAI	IRS @	SITE				
1478	INSTALL BRICK & PRECAST @ SITE STAIRS	12	18-Jul-20	31-Jul-20	124												1478		LL BRIC	K & PRE	ECAST	" @ SITE ST	AIRS			
1608	INSTALL HARDSCAPES @ NORTH SITE	21	01-Aug-20	01-Sep-20	103																					
1438	INSTALL HARDSCAPES @ SOUTH SITE	21	01-Oct-20	30-Oct-20	63								1			+ +							APES @ SOUTH SITE			<u> </u> '
9758	INSTALL LANDSCAPING & IRRIGATION @ NORTH SITE	21	15-Oct-20*	13-Nov-20	74														9758				SCAPING & IRRIGATION	@ NORTH SIT	E	
1618	INSTALL LANDSCAPING & IRRIGATION @ SOUTH SITE	21	31-Oct-20	03-Dec-20	63								1									1	ANDSCAPING & IRRIGA	-		
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																								P		4 OF 14
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