Rockland County
Ed Day, Rockland County Executive

DEPARTMENT OF GENERAL SERVICES, PURCHASING DIVISION
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Paul Brennan, FNIGP, NIGP-CPP, CPPO
Director of Purchasing

ADDENDUM # 2

RFB-RC-CP1519-001
Capital Project 1519 Cooling Tower Replacement

The information in this addendum supersedes any contradictory information set forth in the contract documents. Acknowledge receipt of this addendum in the space provided on the signature page of the bid proposal. Failure to do so, may subject the bidder to disqualification. This addendum forms a part of the contract documents.

This addendum is being issued to include the following:

1. Response to Bid Questions
2. Heat Tracing Specification
3. Electrical Common Work Specifications
4. Master Table of Contents
5. Mechanical Table of Contents

SIGNED:

Paul J. Brennan

PAUL J. BRENNAN, FNIGP, NIGP-CPP, CPPO
DIRECTOR OF PURCHASING

ADDENDUM

10/24/24

Rockland County
Ed Day, Rockland County Executive

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RFB-RC-2024-1519-001
COURTHOUSE COOLING TOWER REPLACMENT

Bid Questions and Responses
10/24/2024

Ednal Saint Jean, Emprise Partners, LLC:

1. Are you able to provide contact information for the BMS vendor and any other required vendors?

   Response: *Per Addendum No. 1: The existing BMS is a Trane product. There is no BMS Contractor on site. The Electrical Construction required for this replacement is also being bid. This is a Wick's Law Project.*

2. Are there any weight restrictions at the crane setup location?

   Response: *The crane subcontractor is required to submit a pick plan to the engineer for approval. The asphalt paving in this area is on grade and not above any underground structure or vault.*

3. What is the maximum allowable time the cooling tower can be offline?

   Response: *Per the Pre-Bid Meeting Minutes/ Addendum No. 1, the cooling towers should be replaced over a long weekend during which the courthouse shall be closed.*

4. What are the hours for inside deliveries?

   Response: *Normal working hours are Monday to Friday 7:00 AM to 4:00 PM. All deliveries and access inside the building must be coordinated with Facilities Management.*

5. Will power be provided for all work areas?

Response: *The building's power will be available to each contractor during construction. Connections to the building's power is the responsibility of each contractor. Any alterations required to the building's electrical equipment must be performed by a Rockland County Licensed Electrician and restored at their own expense.*

6. Is the project tax exempt?

Response: *The County of Rockland is a tax-exempt government entity. A letter certifying this tax exemption status will be shared with the awarded contractors upon request.*

Brian Triolo, Thermodynamics Corp.:

1. Specified BAC cooling tower is available for expedited delivery approximately 8 weeks compared to standard 6 months, please confirm this expedited cost is to be included in our bid?

Response: *Expediting fees are not included in the Bid.*

2. Specification 232113 3.6.D references the condenser water piping to be a minimum 30% propylene glycol, please confirm this is to be water.

Response: *Per the Pre-Bid Meeting Minutes located in Addendum No. 1, this is not a glycol system.*

3. Heat Tracing is to be monitored by the BMS, please advise if this device is to be furnished with the heat trace system or by BMS?

Response*: Refer to the Heat tracing specification section for Modbus / BACnet gate way. Specification Section 23 05 33 has been added by this addendum.*

4. Please confirm the County of Rockland is responsible for registering the Cooling Tower with NYS/DOH.

Response: *The County of Rockland registers the Cooling Towers with NYS/DOH.*

5. Please confirm rigging is to be completed on Friday afternoons, Saturdays or Sundays only.

Response: *Per the Pre-Bid Meeting Minutes located in Addendum No. 1, the rigging is intended to be performed over a scheduled three-day weekend, when the Courthouse shall be closed.*

6. Please confirm crane is able to be stored in parking lot behind courthouse during consecutive rigging days.

Response: *The crane is not expected to demobilize and remobilize each day during the rigging operations period.*

7. Per M2.1 "The existing steel dunnage shall be cleaned of all rust by mechanical grinding or wire wheel, coat bare metal spots with cold galvanized by ZRC." Please confirm only bare spots are to be cleaned & coated with ZRC and not the entire dunnage.

Response: *The entire existing galvanized steel dunnage shall be cleaned of all rust. Any bare metal must be cold galvanized with ZRC.*

8. The specification references a new chemical treatment system, please confirm existing condenser water chemical treatment is to remain and no replacement, start-up, testing or training is required.

Response: *A new chemical treatment system is not being installed as part of this project. Water chemical treatment will by performed by County's vendor on contract.*

9. Please confirm new cooling tower GPM matches existing cooling tower GPM and existing pumps are sufficient and are to be balanced to new cooling tower GPM.

Response: *The existing and proposed cooling towers are both 1200 gpm.*

10. Please confirm heat tracing is to be furnished by Mechanical Contract and installed by Electrical Contractor.

Response: *All heat tracing, associated components, controls and panels shall be furnished and installed by the mechanical contractor. The Electrical contractor shall power the heat trace panel.*

11. Please advise if an Owners and Contractors Protection Policy (OCP) is required for this project.

Response: *All Insurance requirements are provided in the Bid Documents.*

Christopher Armbrister, MDS HVAC-R Inc.:

1. With the anticipated lead time of the equipment being currently 6 months, can the liquidated damages be removed from the contract, or can there be a stipulation of a time extension of the 270 calendar days from Notice of Award to substantial completion in the even the lead time is greater after the notice of award.

Response: *Per the Notice to Bidders, the contract time to perform construction work shall be 270 days. The total contract time including project closeout is 330 days. We do not anticipate a need to extend these deadlines, however, the awarded contractor would not be penalized for reasonable delays beyond their control (i.e. an increase in manufacturer's lead time).*

Kim Ross, Rockland Electric:

1. We do not see spec section 260500 - COMMON WORK RESULTS FOR ELECTRICAL INSTALLATIONS included in the documents but is listed in the table of contents. Could you please issue that section or clarify?

Response: *Specification Section 260500 – Common Work Results for Elecrical Installations - has been added by this addendum.*

SECTION 23 05 33 HEAT TRACING HVAC PIPING

PART 1 – GENERAL

1.1 SUMMARY

A. This Section includes a UL Listed and CSA Certified pipe freeze protection system that consists of a self-regulating heating cable, connection kits, controller and accessories.

B. Related Sections

1. Section 23 07 19 – HVAC Piping Insulation
2. Section 23 09 01 – Direct Digital Controls
3. Section 26 05 19 – Low-Voltage Electrical Power Conductors and Cables
4. Section 26 05 26 – Grounding and Bonding for Electrical Systems

1.2 REFERENCES

A. Underwriter's Laboratories (UL)

B. National Electric Code (NEC)

1.3 SYSTEM DESCRIPTION

A. System for complete above ground water pipe freeze protection.

B. System consists of a self-regulating heating cable, connection kits, controller, and accessories.

C. The heating cable shall have a modified polyolefin (-JT) jacket.

1.4 ACTION SUBMITTALS

A. Product Data

1. Heating cable data sheet
2. Controller data sheet
3. UL, CSA approval certificates for freeze protection of above ground water piping.
4. Heating Cable Installation and Maintenance Instructions
5. Connection Kit and Controller Instructions.

1.5 QUALITY ASSURANCE

A. Manufacturers' Qualifications

1. Manufacturer to show minimum of thirty (30) years of experience in manufacturing self-regulating heating cables.
2. Manufacturer to provide products consistent with IEEE 515.1 and CSA 22.2 No 130-03 requirements.

B. Installer Qualifications

1. System installer shall have complete understanding of product and product literature from manufacturer or authorized representative prior to installation.
2. Electrical connections shall be performed by a licensed electrician.

C. Regulatory Requirements and Approvals

1. The heat tracing system shall be UL Listed
2. Electrical Components, Devices, and Accessories: Listed and labelled as defined in NFPA 70 and marked for intended use.

1.6 DELIVERY, STORAGE AND HANDLING

A. General Requirements: Deliver, store and handle products to prevent their deterioration or damage due to moisture, temperature changes, contaminates or other causes.

B. Delivery and Acceptance Requirements: Deliver products to site in original, unopened containers or packages with intact and legible manufacturers' labels identifying the following:

1. Product and Manufacturer
2. Length/Quantity
3. Lot Number
4. Installation and Maintenance Instructions

C. Storage and Handling Requirements

1. Store the heating cable in a clean, dry location with a temperature range -40°F to 140°F
2. Protect products from mechanical damage and water ingress.

1.7 WARRANTY

A. Extended Warranty

1. Manufacturer shall make available a minimum two (2) year warranty for heating cable and connection kits. Provide one (1) year warranty for all heat trace controllers.
2. Contractor shall submit to owner the results of all installation tests required by the manufacturer.

PART 2 – PRODUCTS

2.1 MANUFACTURER OF SELF-REGULATING HEATER CABLES

A. Contract Documents are based on manufacturer and products named below to establish a standard of quality.

B. Manufacturer of Cable

C. Manufacturer of Controls

1. Manufacturer shall be Emerson – Nelson
2. Manufacturer shall be Frio Controls
3. Manufacturer shall provide UL and CSA approval certificates for self-regulating heating cables.
4. Manufacturer to show minimum of thirty (30) years of experience in manufacturing self-regulating heating cables.

2.2 MATERIALS

A. Heating Cables – Nelson CLT

1. CLT Heating Cable
   a. Shall be a self-regulating heater cable with a parallel circuit electric heater strip.
   b. Shall feature an irradiation cross-linked conductive polymer core material that is extruded over the multi-stranded, tin-plated, 18-gauge copper bus wires.

c. The conductive core material shall increase or decrease its heat output in response to temperature changes.
d. Max. rated service voltage shall be 277 VAC.
e. Shall feature a thermoplastic elastomer inner jacket extruded over the conductive core material that provides dielectric strength, moisture resistance, and protection from impact and abrasion damage.
f. A stranded copper braid shall be installed over the inner jacket, providing a continuous ground path.
g. A modified polyolefin over jacket shall cover the braid for added dielectric strength, moisture resistance, and protection from impact and abrasion damage.

B. Capacities and Characteristics:

1. Maximum Heat Output: 8 W/ft.. refer to plans
2. Piping Diameter: As shown on Drawings.
3. Number of Parallel Cables: As recommended by manufacturer.
4. Volts: 120 V. Coordinate with electrical drawings.
5. Phase: Single phase.
6. Hertz: 60 Hz.
7. Full-Load Amperes: In accordance with manufacturer's published data.
8. Minimum Circuit Ampacity: In accordance with manufacturer's published data.
9. Maximum Overcurrent Protection: In accordance with manufacturer's published data.

C. Connection Kits – Nelson PLT-BC, PLT-BS, and PLT-BY

1. PLT-BC Power Connection Kit supplied for this project.
   a. Shall be suitable for connecting up to two heating cables to customer supplied power wiring. And shall contain the following.

      Non-metallic connection kits •

      The PLT-BC Power Connection Kit is suitable for connecting to two heating cables to customer supplied power wiring– •

      Kit Contents:

      – 1 Universal Base, Box Adapter, Sealing Gasket, O-Ring and locknut
      – 1 Junction Box with Sealing Gasket and Cover
      – 1 Sealing Grommet (Specify Cable Construction)
      – 1 Power Termination and Cable End Seal with Adhesive Sealant – 3 Power Terminations and 2 Cable End Seals with Adhesive Sealant
      – 1 3-Point Floating Terminal Block
      – 1 Ground Connection Splice
      – 2 Stainless Steel Pipe Clamps

2. PLT-BS Splice Connection Kit
   a. Shall be suitable for connecting two heating cables in an in-line splice configuration.
3. PLT-BY Tee Connection Kit
   a. Shall be suitable for connecting three heating cables in a tee splice configuration.

D. Controller – Frio S1-A

1. Shall be a micro-processor based digital controller specifically designed for electric heat tracing applications.
2. Shall provide temperature control of an individual heater segment with sensor monitoring, remote alarm contacts, and ground fault leakage detection.
3. Shall offer the following features:
   i. Ground Fault Trip function
      - A fixed 30mA trip level is provided for circuit integrity eliminating the need for separate EPD branch circuit breakers.
   ii. Temperature Input:
      - Range:
        - Range of -40°C to 105°C,
        - Accuracy: +/- 1°C
        - Repeatability: +/- 1°C
        - Frio Thermistor: 2-Wire shielded pair 24 AWG leads, 10k NTC thermistor with ± 1% accuracy, operating range of -40°C to 105°C, leads and thermistor tip are black TPE, IP68, and RoHS)
        - RTD: Compatible with 3-Wire pt100 RTD lead size 14-24 AWG

   iii. Voltage Range: 100 Vac to 277 Vac
   iv. Heater Switching
      - Configuration: Two-pole, EMR
      - Ratings: 100-277 Vac, 30A continuous (resistive load only)
      - Line Frequency: 50 or 60 Hz
   v. Control Power
      - Power Requirement: Control power from heater voltage, 110- 277 VAC.
   vi. User Interface
      - Display: 2.47 in. OLED display 128x64 pixels
      - Alarm Output: LED Indication
      - Panel Indicators:
        - Status LED
        - Alarm LED
        - Heat LED
        - Blinkup LED

      - Keypad:
        - 4 buttons, enclosure tested to IP67 & NEMA 4X
        - Up, down, enter, back
   vii. Environment
      - Operating Temperature: -30°C to 60°C
   viii. Enclosure
      - Type: NEMA Type 4X Fiberglass reinforced,

carbon impregnated, UV resistant polymer
- Dimensions with mounting feet: H: 6.29 in. D: 3.625 in. W: 7.55 in.

ix. Alarm Output
- Low Voltage Outputs
  - Dry Contact Alarm: Normally Closed, Open on Alarm (contacts rated for 1 A max at 120 VAC or 24 VDC, 14-24 AWG).
  - Alarm output shall be annunciated at the building BMS workstation.
- Connectivity
  - WIFI 802.11 Dual Band 2.4 GHz & 5 GHz and Ethernet (RJ45, Cat 5 or 6) See user manual for firewall information
  - TIA/EIA 485 (RS-485): Frio Modbus (Isolated 3- wire 2 x Signal w/ GND, 14-24 AWG)
    - BACnet IP & MS/TP: Via pre-configured SMC Gateway

x. Alarm Function
- High Temperature Alarm
- Low Temperature Alarm
- Sensor Failure
- Low Current Alarm
- High Current Alarm
- Ground Fault Trip

xi. User-Definable Options
- Deadband: Adjustable 2°F to 10°F

xii. Spot Check Report
- PDF report generated by the heat trace controller
- Automatically generated using data from the system installed on the circuit
- Includes values for:
  - Average voltage
  - Voltage Drop
  - Inrush current
  - Steady-state current
  - Inrush ground fault current
  - Steady-state ground fault current
  - Temperature sensor readings

D Accessories
- Nelson PLT and AX Series Connection Kits for Power, Splice, Tee Splice, Powered Splices and End Terminations
- Nelson TA, TH, TE and HC Series Thermostats and Contactors
- Junction Boxes, Tapes and Warning Signs
- Custom Control, Monitoring and Power Panel
- Molded silicone termination

- Heat shrinkable termination
- Pipe and Tank adaptors
- Pipe clams
- Terminal blocks
- Universal grommets
- Junction boxes
- Warning signs WS-100 – weather proof warning sign.
- Tape GT-60
- End of circuit lights
- Conduit entry seal

E. EZ Gateway Modbus to BACnet

Provide the EZ Gateway Modbus to BACnet (FS-EZX-MOD-BAC). High performance building and industrial automation protocol gateway for integrators to interface Modbus certified products to BACnet management systems in commercial buildings, campuses, and industrial facilities. The EZ Gateway Modbus to BACnet integrates such Modbus-based devices and systems to BACnet-based management systems over BACnet MS/TP or BACnet/IP protocols. The EZ Gateway Modbus to BACnet combines field-hardened Modbus and BACnet protocol drivers with an easy to use configuration interface. The EZ Gateway's Modbus interface is compatible with all Modbus-certified products. The intuitive web-based interface allows configurations to be built in the field or in the office, thereby simplifying the commissioning and integration process. The unique FieldServer DeviceProxy™ feature allows each Modbus device to be presented as a corresponding virtual BACnet device within the EZ Gateway, thereby providing granular visibility and control over each Modbus device from within a BACnet management framework. For example, offline / online status is visible at the individual Modbus device level. With the EZ Gateway Modbus to BACnet, the integrator or contractor does not need to be a protocol expert, and can minimize configuration and commissioning time, while also reducing ongoing operating and maintenance costs.

PART 3 – EXECUTION

3.1 EXAMINATION

A. Verification of Conditions

1. Prior to installation of heating cable system, verify that all piping which will be heat trace has passed all hydrostatic/pressure test and is signed off by plumbing inspector.

B. Preinstalling Testing

1. Prior to installing heating cable on the piping an insulation resistance test shall be performed by the installing contractor to ensure integrity of heating cable as describe in the installation & maintenance manual.

3.3 INSTALLATION

A. Acceptable Installers

1. Subject to compliance with requirements of Contract Documents, installer shall be familiar with installing pipe trace cables and equipment.

B. The process pipe freeze protection installation shall conform to all local building codes including but limited to NFPA70, IEEE 515 industrial Heat Tracing Applications.

C. The installer shall layout heating cable per approved shop drawings.

D. Grounding of the Process Pipe Freeze Protection System shall be in accordance with section 26 05 26 “Grounding & Bonding for Electrical Systems”

E. Connections of all electrical wiring shall be in accordance with section 26 05 19 “Low- Voltage Electrical Systems”

F. Comply with the following manufacturer’s recommendations:

1. Self-Regulating Heating Cable Installation & Maintenance Instructions (GA- 1765).
2. Frio Heater Controller Operating Manual (Rev.3.0)

3.4 FIELD QUALITY CONTROL

A. Initial start-up and field testing (commissioning) of the system shall be performed by factory technician or factory representative per the owner’s requirements.

B. Field Tests and Inspections in accordance with the Self-Regulating Heating Cable Installation & Maintenance Instructions (GA-1765), recorded and included in submittals to owner:

1. The following test shall be performed before the heat cable has been installed:
   a. Continuity test on reel
   b. Insulation resistance on reel – 1000 VDC
2. The following test shall be performed after the heat cable has been installed but before the insulation and after insulating the piping:
   a. Continuity test
   b. Insulation resistance – 1000 VDC, 20 megaohm minimum
3. The technician shall verify that the Frio S1-A parameters are set to the application requirements.

C. The heat trace control system shall include self-check capabilities and shall be verified by a PDF report generated by the heat trace control system (Frio Spot Check). The PDF report shall be delivered to the necessary parties after system start up. The automatically generated report shall use data from system operation with all heat trace installed on the circuit and must include values for average voltage, voltage drop, inrush current, steady-state current, inrush ground fault current, steady-state ground fault current and, if applicable, temperature sensor readings. Report must be verified prior to system hand-off and a copy shall be retained and provided to the facility operator.

3.5 MAINTENANCE

A. Maintenance Service

1. Comply with manufacturer’s recommendations in the applicable Installation and Maintenance Instructions.

END OF SECTION

SECTION 260500 - COMMON WORK RESULTS FOR ELECTRICAL INSTALLATIONS

PART 1 -

1.1 RELATED DOCUMENTS

A. These basic Electrical Requirements apply to all Division 26000 Sections.

B. The work of this Section consists of providing of all materials, labor and equipment and the like necessary and/or required for the complete execution of all Electrical Installations and related work for this project, as required by the contract documents.

1.2 RELATED DOCUMENTS

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

1.3 REFERENCES

A. ASHRAE - American Society of Heating, Refrigerating and Air Conditioning Engineers Guides and Standards, latest editions.

B. SMACNA - Sheet Metal and Air Conditioning Contractors National Association.

C. ASME - American Society of Mechanical Engineers.

D. UL - Underwriters Laboratory.

E. NFPA - National Fire Protection Association.

1.4 REGULATORY REQUIREMENTS

A. Conform to New York State Building Codes and Energy Code as well as all local codes.

B. Electrical : Conform to National Electrical Code, NFPA 70 (2017).

C. Obtain permits, and request inspections from authority having jurisdiction.

1.5 QUALITY ASSURANCE

A. The Contractor shall have the work indicated on the drawings and/or specified in each section performed by vendors or mechanics experienced and skilled in its implantation or by a “Specialist”, “Specialty Contractor” or “Specialty Subcontractor” under contractual agreement with the Contractor. These terms mean an individual or firm of established reputation, or, if newly organized, whose personnel have previously established a reputation in the same field,

which is regularly engaged in, and which maintains a regular force of workmen skilled in either manufacturing or fabricating items required by the Contract, installing items required by the Contract, or otherwise performing work required by the Contract.

B. Where the Contract Specifications require installation by a "Specialist," that term shall also be deemed to mean either the manufacturer of the item, an individual or firm licensed by the manufacturer, or an individual or firm who will perform such work under the manufacturer's direct supervision.

1.6 PROJECT/SITE CONDITIONS

A. Install Work in approximate locations shown on Drawings, unless prevented by Project conditions.

B. Prepare drawings showing proposed arrangement of Work to meet Project conditions, including changes to Work specified in other Sections.

1.7 SCOPE OF WORK

A. This Contractor shall be responsible for coordinating his work with all other trades.

B. The Contractor shall provide all materials, labor, equipment, tools, appliances, services, hoisting, scaffolding, supervision and overhead for the furnishing and installing of all electrical work and related work including but not limited to the following:

1. Demolition of existing work including, but not limited to, generator, transformers, switchboards, panelboards, lighting, wiring, electrical accessories/equipment, control panels, miscellaneous equipment.
2. Equipment Supports
3. Vibration isolation.
4. Motor starters and disconnects.
5. Protection.
6. Identification.
7. Coordination.
8. Phasing.
9. Rigging.
10. Shop Drawings.
11. As-Built Drawings and Maintenance Manuals.
12. Warrantees.
13. Commissioning

PART 2 - PRODUCTS – NOT USED

PART 3 - EXECUTION

3.1 GENERAL

A. Construct all apparatus of materials and pressure ratings suitable for the conditions encountered during continuous operation.

B. Construct all equipment in accordance with requirements of all applicable codes.

C. Provide all wiring, equipment, accessories and other components necessary to make all systems complete and operable.

D. The contractor shall warranty all work, including labor and materials, and equipment furnished and installed as part of this contract for a minimum period of year from the date of acceptance by the owner, in writing. Certain equipment, may have longer warranties as indicated in the specifications. In such cases the longer of the two warranties shall prevail.

3.2 SHOP DRAWINGS AND SUBMITTALS (COORDINATE WITH DIVISION 1)

A. Shop drawings and samples shall be prepared and submitted in accordance with the requirements established in the contract and shall consist of all items listed in the following paragraphs.

B. Manufacturer's data or shop drawings giving full information as to dimensions, materials, and all information pertinent to the adequacy of the submitted equipment shall be submitted for review. Shop drawings shall include, but not be limited to the following:

C. Submit all Electrical equipment noted and scheduled on plans including but not limited to the following:
1. Generator
2. Transformers
3. Switchboards
4. MCCs
5. Panelboards
6. Raceways and boxes
7. Lighting and controls
8. Wiring devices

D. The contractor shall, upon award, submit a schedule for the engineer’s review indicating when each of the above shop drawings shall be submitted. Submittals shall be made in a timely manner as the project progresses in accordance with the Construction manager or General contractor’s work schedules. The contractor shall allow sufficient time for the engineers to perform his review. A minimum of 10 business days shall be required. Untimely submittals shall be cause for the owner to make a delay against the contractor.

E. Demolition, purchase and or installation shall not begin until shop drawings pertaining to the equipment associated with any related potion of the work have been submitted.

F. Coordinated shop drawings shall indicate all existing and/or new sheet metal, lights, walls, piping, structural elements, existing work, conduits, equipment, fire alarm devices etc. and dimension locations of ductwork including elevations in relation to these items.

G. Where shop drawings have been reviewed by the Engineer, such review shall not be considered as a guarantee of measurements or building conditions. Where drawings have been reviewed, said review does not mean that drawings have been checked in detail; said review does not substantiate any quantities and in any way relieve the Contractor from his responsibility nor the necessity of furnishing materials or performing work required by the Contract Drawings and Specifications. It does not relieve the contractor of the responsibility to perform all work to accepted industry standards and in a code compliant manor. Approval of shop drawings containing errors does not relieve the contractor from making corrections at his expense.

H. Where substitutions are submitted for approval the review shall be for general performance comparison to the specified product. Products shall not be reviewed for size, clearance or coordination with other trades. Coordination with other trades shall be the responsibility of the contractor. And changes to existing conditions or changes required to the work of other trades such as a result of substituted material or equipment approved or not shall be the responsibility of this contractor.

I. Approval of shop drawings

1. The Contractor shall be specifically responsible for checking equipment dimensions and clearances and confirming that equipment will fit into the designated space and connect properly to adjoining equipment and/or materials.

2. Submittals marked "Make Corrections Noted" give authority to proceed in accordance with the notes. However, if drawings are also marked "Amend and Resubmit", corrected drawings must be resubmitted for final review.

3. Submittals marked "Rejected" do not give authority to proceed with any portion of the work shown there-on. Drawings must be resubmitted.

4. Submittals marked "Rejected" or "Amend and Resubmit" shall include a specific written response to the engineer’s comments. Resubmission of a submittal without a written response to the engineer’s comments will be considered incomplete and shall be returned un-reviewed.

J. The contractor shall submit a composite shop drawing layout plan. This shall include all trades including plumbing mechanical and electrical trades. It shall indicate all equipment, piping conduit. It shall include an accurate architectural background. The composite drawing is for contractors and subcontractors to coordinate their work with the work of other trades prior to submitting to the engineer for review and approval. Identify equipment clearances as required for service and maintenance by the manufacture. Indicate conflicts for resolution.

K. Coordination submittals for piping, conduit and equipment within the building shall be made using 3-d software such as Autocad and shall include plan view sections and elevations as

necessary to full illustrate and evaluate and resolve all structural, piping, major conduit and equipment for conflicts with other trades.

3.3 CHARTS AND TAGS

A. Comply with Supplemental and general Conditions

3.4 CODES AND STANDARDS

A. All equipment and installation methods shall conform to the applicable standards and/or recommendations set forth in the New York State Building Code, Local Codes as well as all Codes and Standards listed in the general requirements sections of the specification.

3.5 FEES & PERMITS

A. The Contractor shall obtain all permits and pay all fees required related to this scope of work

3.6 PAINTING

A. All equipment and all other factory manufactured and assembled apparatus shall be factory coated with one coat of primer and one coat of machinery enamel standard color at the factory and after installation, all finishes shall be cleaned and touched up to repair any damage incurred during construction.

B. All supports, nuts, bolts and hanger fasteners located outside shall be galvanized or nickel plated.

3.7 RIGGING

A. Furnish all labor, materials and equipment required to rig equipment and materials.

B. The rigger shall secure any necessary permits and comply with all applicable Federal, State and local safety regulations. A copy of permits to be kept at both the project site and Engineer's Office.

C. The rigger shall have a minimum of five (5) years of practical experience and hold a master riggers license if required.

D. The procedure for rigging shall be submitted to the Engineer for review. All possible precautions should be taken to prevent damage to the structure, streets, sidewalks, curbs, lawns, etc.

3.8 CUTTING AND PATCHING

A. All cutting and patching required for conduits, etc., passing through walls, floors, and roof shall be provided by this Contractor under this contract unless otherwise noted.

B. Patching materials and application shall match existing construction. It also includes patch to match any voids left behind by removals. Hire a skilled tradesman (mason, carpenter, etc.) to perform this work.

C. Where applicable, new holes for piping installation shall be core drilled.

D. Pipe Sleeves & Fire-stopping:

1. Provide for all pipes, conduits ducts, and other elements passing through floors, walls, partitions and structural elements, sleeves as specified. Sleeves shall be of adequate diameter to allow for a minimum of 3/4 inches clear all around sleeve and pipe. When pipe, conduit ducts or other such element penetrates other than fire rated assembly and is insulated, insulation shall pass continuously through sleeves with 1/2 inch clearance between insulation and sleeve.
2. Where pipes, conduits and other such elements penetrate fire rated assemblies, or where holes or voids are created to extend mechanical systems through fire rated assemblies (walls, floors, ceilings, structure, etc.); sleeves and fire-stopping systems shall be installed.

E. Furnish access doors, to the General Contractor for installation where required in finished walls, partitions and the like for access to junction boxes, controls, valves, etc, concealed behind finished construction.

F. Submit location drawings and sizes for review prior to installation.

3.9 PROTECTION-COORDINATE WITH DIVISION 1

A. Special protection is required for installation of a Derrick or other device for rigging purposes. This Contractor shall coordinate with the rigger to facilitate rigging work.

B. Recommendations and Provisions of ANSI Bulletin A10.2 and OSHA shall be complied with in-so-far as applicable to the work.

C. The Contractor shall provide temporary partitions or tarpaulins to protect adjacent spaces and/or equipment. He shall be responsible for any damage or injury to person or property of any character resulting from any act, omission, neglect or misconduct in his manner or method of executing his work.

D. The Contractor shall restore at his own expense such property to a condition similar or equal to that existing before such damage or injury in an acceptable manner.

E. The Contractor, furthermore, shall conduct his operations in such a manner as to prevent dust and debris from transferring on to adjoining property or into existing spaces.

F. All openings cut in walls, floors, roof or ceilings of the building, for conduit, pipe, ductwork, etc., shall be closed off with box-type temporary protective enclosures of ¼" tempered hardboard, except when mechanics are actually working at the particular opening. Enclosures shall be constructed of fireproof 2x4 frame, four (4) sides covered and made completely dust and water tight.

G. All finished floor areas through which the contractor must pass with materials or equipment shall be protected with a layer of ¼" hardboard, "Masonite", laid with joints taped together. Roofs shall be protected with ½" plywood

3.10 EQUIPMENT SUPPORTS

A. A.Provide supplementary steel dunnage, curbs, angle iron stands, etc., to properly set and install all equipment, including supports necessary to properly pitch piping.

3.11 WELDING

A. Welding and equipment shall conform to the American Welding Society's Code for Welding in Building Construction, latest edition as well as state and local laws and ordinances.

B. The handling and storage of all welding materials, acetylene and oxygen tanks, burners, and other equipment required for the execution of welding and cutting work shall be subject at all times to the approval of the Owner and/or Architect. All welding materials and gas tanks shall be promptly removed from the premises upon completion of each day's work or stored in a manner satisfactory to the owner. Welding and equipment shall conform to the American Welding Society's Code for Welding in Building Construction, latest edition as well as state and local laws and ordinances.

C. Provide all temporary ventilation , and ventilation air systems required during welding operations as required by OSHA.

3.12 AS-BUILT DRAWINGS

A. The Contractor shall provide a complete set of As-Built drawings showing actual installation and locations of all new and existing equipment, piping, and ductwork in the entire building. Schedules shall be revised to indicate actual equipment installed.

B. As-Built drawings shall be submitted as per contract requirements in accordance with Division 1 and shall be submitted in paper format for review. Accepted as builts shall then be submitted in AutoCAD format on hard disc.

3.13 CONDITIONS

A. Inspection: Prior to all work of this Section, carefully inspect the installed work of all other trades and verify that all such work is complete to the point where this installation may properly commence. Verify that the work of this Section may be completed in strict accordance with all pertinent codes and regulations, the approved Shop Drawings, and the Manufacturers' recommendations.

B. Discrepancies: In the event of discrepancy, immediately notify the Engineer. Do not proceed in areas of discrepancy until all such discrepancies have been fully resolved.

3.14 INSTALLATION OF EQUIPMENT

A. Locations: Install all equipment in the locations shown on the approved Shop Drawings except where specifically otherwise approved on the job by the Owner and/or Engineer.

B. Interferences: Avoid interference with structure, and with work of other trades, preserving adequate headroom and clearing all doors and passageways to the approval of the Engineer.

C. Inspection: Check each piece of equipment in the system for defects, verifying that all parts are properly furnished and installed, and that all items function properly, and that all adjustments have been made.

3.15 CLOSING-IN OF UNINSPECTED WORK

A. General: Do not allow or cause any of the work to be covered up or enclosed until it has been inspected, tested, and accepted by the Engineer and by all other authorities having jurisdiction.

B. Uncovering: Should any of the work of this Section be covered up or enclosed before it has been completely inspected, tested, and approved, do all things necessary to uncover all such work. After the work has been completely inspected, tested, and approved, provide all materials and labor necessary and make all repairs necessary to restore the work to its original and proper condition at no additional cost to the owner.

3.16 BUILDING ACCESS

A. The Contractor shall inform himself fully regarding peculiarities and limitations of space available for the passage and installation of all equipment and materials under the Contract.

B. Verify and coordinate removal of existing construction and/or knock-down of equipment to suit conditions. Special attention should be given to equipment installation. Provide all labor and material to facilitate installation.

3.17 COOPERATION WITH OTHER TRADES PHASING

A. Cooperate with other trades in order that all systems in the work may be installed in the best arrangements.

B. Coordinate as required with all other trades to share space in common areas and to provide the maximum of access to each system.

C. This Contractor shall submit fully coordinated shop drawings showing all piping, ductwork and equipment, as well as relevant work of all other trades such as light, conduits, structural and steel, which may impact the final size or placement of piping, ductwork, equipment, diffusers and grilles.

D. The work shall be scheduled and phased in accordance with the requirements of the contract and the client. Prior to the commencement of work the HVAC contractor shall submit a schedule in

writing to the Architect and owner for approval. There shall be no shut downs of any systems without prior written approval from the owner.

3.18 CLEANING

A. It is the intent of the contract documents that all work, including the inside of equipment be left in a clean condition. All construction dirt shall be removed from material and equipment.

B. All removed items shall be taken off the premises and discarded in a manner satisfactory to the Owner.

3.19 COMPLETENESS

A. It is the intent of the contract documents to provide complete systems. Completeness shall mean not only that all material and equipment has been installed properly, but that all material and equipment is installed, adjusted, and operating as per the design intent in the opinion of the Engineer and in accordance with generally accepted industry good practice.

3.20 FIRE PREVENTION DURING HOT WORK

A. Before starting operations, the Contractor shall furnish trained personnel to provide fire watches for locations where hot work is to be performed. One fire watcher may observe several locations in a relatively small contiguous area. Contractor shall furnish suitable type, fully-charged, operable portable fire extinguisher to each fire watcher.

B. The Contractor shall provide fire watchers who know how to operate the fire extinguisher, how to turn on a fire alarm and how to summon the fire department.

C. Before starting operations, take suitable precautions to minimize the hazard of a fire communicating to the opposite side of walls, floors, ceilings and roofs from the operations.

3.21 SAFETY MEASURES

A. Hot work shall not be done in or near rooms or areas where flammable liquids or explosive vapors are present or thought to be present. A combustible gas indicator (explosimeter) test shall be conducted to assure that each area is safe. The Contractor is responsible for arranging and paying for each test.

B. Insofar as possible, the Contractor shall remove and keep the area free from all combustibles, including rubbish, paper and waste within a radius of 25 feet from hot operations.

C. If combustible material cannot be removed, the Contractor shall furnish fireproof blankets to cover such materials. At the direction of the owner floors, walls, and ceilings of combustible material shall be wetted thoroughly with water before, during, and after operations sufficiently to afford adequate protection.

D. Where possible, the Contractor shall furnish and use baffles of metal or gypsum board to prevent the spraying of sparks, hot slag and other hot particles into surrounding combustible material.

E. The Contractor shall prevent the spread of sparks and particles of hot metal through open windows, doors, and holes and cracks in floors, walls, ceilings and roofs.

F. Cylinders of gas used in hot work shall be placed a safe distance from the work. The Contractor shall provide hoses and equipment free of deterioration, malfunction and leaks. Suitable supports shall be provided to prevent accidental overturning of cylinders. All cylinder control valves shall be shut off while in use with the gas pressure regulator set at 15 psi or less.

G. When hot work operations are completed or ended for the day, each location of the days work shall be inspected by the Contractor 30 to 60 minutes after completion of operations to detect for hidden or smoldering fires and to ensure that proper housekeeping is maintained. Contractor shall cleanup the area of work at the end of each shift or workday.

H. Where sprinkler protection exists, the sprinkler system shall be maintained without interruption while operations are being performed. If operations are performed close to automatic sprinkler heads, gypsum board sheets or damp cloth guards may be used to shield the individual heads temporarily. The heads shall be inspected by the Contractor immediately after hot work operations cease, to ensure all materials have been removed from the heads and that the heads have not been damaged.

I. Suitable type, fully-charged, operable portable fire extinguisher shall be available at all times during hot work operations.

J. If any of the above safeguards are not employed, or are violated, the Contracting owners Representative may, by written notice, stop the work until compliance is obtained. Such stoppage shall not relieve the Contractor form performing his work within the Contract period for the Contract price.

3.22 USE OF OWNERS EQUIPMENT

A. The contractor shall only use the owners equipment where agreed prior and with 5 days notice minimum or as agreed.

3.23 CLOSEOUT PROCEDURES

A. General Operating and Maintenance Instructions: Arrange for each installer of operating equipment and other work that requires regular or continuing maintenance, to meet at the site with the Owner's personnel to provide necessary basic instructions in the proper operation and maintenance of the entire Work. Where installers are not expert in the required procedures, include instruction by the manufacturer's representatives.

B. Where applicable, provide instruction and training, including application of special coatings systems, at manufacturer's recommendation.

C. Provide a detailed review of the following items:
   1. Maintenance manuals

2. Record documents and catalog cuts for each piece of equipment.
3. Spare parts and materials
4. Tools
5. Lubricants
6. Fuels
7. Identification systems
8. Control sequences
9. Hazards
10. Cleaning

D. Warranties, bonds, maintenance agreements, and similar continuing commitments.

E. Demonstrate the following procedures:
1. Start-up
2. Shut-down
3. Emergency operations
4. Noise and vibration adjustments
5. Safety procedures
6. Economy and efficiency adjustments
7. Effective energy utilization.
8. Periodic maintenance

F. Prepare instruction periods to consist of classroom and or "hands-on" instruction. Provide all equipment including, but not limited to, the following.
1. Generator
2. Lighting and controls
3. MCC
4. Switchboard and metering
5. Circuit breakers

Consult individual equipment specification sections for additional training requirements.

G. Prepare a written agenda for each session and submit for review and approval. Include date, location, purpose, specific scope, proposed attendance and session duration.

H. Record training sessions in digital format, format as selected by the Owner. Turn over digital files to the Owner after training has been completed.

END OF SECTION

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