This addendum is issued to clarify, correct or supplement the Documents as originally issued and will become a part of the Contract. Receipt thereof shall be acknowledged by Bidders in space provided in the Form of Bid. Failure to acknowledge this Addendum on the official Form of Bid may be cause for rejection of Bid.

1.01. **Clarification**: (Reference to the Interim Bays Addition): The existing Mount Holly Public Works Facility is a fully-functioning Public Works facility that is owned and operated by the Township of Mount Holly. This facility must remain fully-functioning and without impedance during the construction of the Interim Bays addition. The Contractor shall be required to coordinate all construction activities, staging, parking, and other required activities with the operations of the Mount Holly Public Works Department and the Construction Manager.

1.02. **Amendment**: (Reference to detail 16/A4.5 & All Exterior Railings, Guardrails, and Posts @ Main Entrance/100): Delete any notes referencing exterior galvanized materials and replace with, “all exterior railings, guardrails and posts shall be either Class I clear anodized aluminum or stainless steel”. Typical at all exterior conditions.

Delete any references to unpainted galvanized guardrails and handrail at exterior conditions.

**Interior** guardrails and handrails shall remain as originally noted on the drawings.

1.03. **Clarification**: (Reference to Exterior Metal Roof Brackets/Drawing A4.3): Follow attached amended drawing A4.3 for additional information related to the exposed metal brackets along column lines 8 through 14 on the North and South Elevations of Equipment Bays/120. Brackets may either be field-painted with high-performance coatings (HPC) or factory powder-coated. Finish color to be selected by Architect.

Delete sheet A4.3 that was issued with the bid set, and replace with the attached, revised sheet A4.3, dated 02 September 2020.

Install brackets to the existing masonry walls with 3/8” thick stainless-steel bolts into the concrete masonry (CMU) backup wall, with Hilti HY270 system or equivalent. Provide steel shop drawings of all brackets and attachment details.
Clarification: (Reference to Specification Sections 071416 and 075600):

Specification Section 071416, COLD-APPLIED FLUID WATERPROOFING is applicable to waterproofing of foundation, slabs, footings and other below-grade areas. While the specification is for polyurethane products, equivalently-performing alternative PMMA products may be considered.

Section 075600, COLD-FLUID APPLIED ROOFING is applicable to roofing applications.

Clarification: (Reference to Square Footages Shown on Drawings): All square footages referenced on the drawings are approximate. Contractors shall not use any square footage shown on the drawings for estimating, take-offs, etc.

Clarification: (References to Finish Floor Heights @ Second Floors): The intent is for the second-floor finish floor elevation of the existing building and the addition’s second floor finish floor elevation to match. The Contractor shall carefully field-verify all existing and proposed finish floor dimensions (elevations) shown, and to coordinate the structural steel and other building requirements to ensure that the second-floor finish floors align between the historic existing building and the addition.

Clarification: (Reference to Plumbing-Site Coordination): Contractor shall be aware of two, 2-inch subsurface vent lines from the OWS to the building Room SCBA/121. Refer to drawing P1. Contractor shall carefully coordinate the installation and elevations of these lines with all required storm drainage lines as shown on the site drawings to avoid conflicts.

Clarification: (Reference to Electrical-Site Coordination): Contractors shall be aware of required subsurface electrical lines from the transformer, generator, and the building service. Refer to drawing E1. Contractor shall carefully coordinate the installation and elevations of these lines with all required storm drainage lines/recharge area as shown on the site drawings to avoid conflicts.

Clarification: (Reference to Light Fixture W1 on sheet CM2201): Contractors are referred to Light Fixture W1 shown on the eastern exterior wall of the Equipment Bays. Refer to electrical drawings for supplemental requirements.

Amendment: (Reference to attached Sketch SKE-090820-1): Refer to the referenced SKE drawing for revised locations and quantities of bollards at the transformer and generator locations.

Amendment/Clarification: (Reference to Section 014000, QUALITY REQUIREMENTS): Amend Paragraphs 1.11 and 1.3.1 to now read as follows:

“I. Special Tests and Inspections: Special Inspections and Tests are required by this specification section in full accordance with the requirements of the IBC 2015-2018-N.J. Edition.

Delete any references to Special Tests and Inspections being the responsibility of the Contractor.
All special tests and inspections are now the responsibility of the Owner. All required Special Tests and Inspections shall be coordinated through the Construction Manager.

Delete any Code references to IBC 2015.

1.12. **Amendment/Clarifications**: (Pennoni Site Work-Relief Building): Please see the attached amended site documents prepared by Pennoni Associates as part of this Addendum. Please replace originally issued documents, with the amended documents.

   A. Memorandum, dated 25 September 2020, consisting of two pages.

   B. Amended site drawings, consisting of 11 sheets total.

1.13. **Amendment**: (Reference to attached, amended Interim Bays, drawings M1 & E1): Replace original M1 and E1 drawings with the attached amended M1 and E1 drawings, dated 25 September 2020.

1.14 Mechanical M1: Added material and finish to louver detail.

Electrical E1: Added on/off switch for unit heaters by the door.

1.15 **Amendment/Clarifications**: (Relief Building-Amended MEP.): Please see the attached amended drawings, dated 25 September 2020, prepared by Kelter & Gilligo as part of this Addendum. Please replace originally issued documents, with the attached amended documents.


2.  P-drawings: P1, P2, P3, P4, P8, P9.

3.  FP-drawings: FP1, FP3.


1.16 **Amendment**: (Reference to Interim Bays Addition, Soffit and Eave Details): Refer to attached sketches Eave/SK.01 and Peak/SK.02 details, both dated 10 September 2020, depicting the required framing for soffits.

1.17 **Amendment/Clarification**: (Reference to Roof Plan 02/A2.3): Delete note shown on Roof Area B, “2-ply SBS modified roofing system”, and replace with “cold-fluid-applied roofing system”.

All low-slope roof sections on this Project shall be cold-fluid-applied roofing system, at locations shown on the drawings.

1.18 **Clarification**: (Reference to Interim Bays Addition): The Interim Bays addition (5475C) is part of the Base-Bid.
**Deletion:** (Reference to Section 000010, Table of Contents-Volume 1 of 2): Delete line number 33 on page 3 of TOC-Volume 1. There is no specification section 074646, Fiber Cement Siding does not exist on this Project.

**Clarification:** (Reference to Typical Bollard Detail 03/A2.10): Delete any reference to the priming and painting of steel bollards. All bollards shall be filled solid with concrete and covered with plastic bollard covers per the drawings and specifications.

**Clarification:** (Reference to Section 011000, paragraph 1.13B): Because this project is considered historically significant by the State of New Jersey, all historic renovation work shall comply with the applicable sections of Secretary of Interior Standards for Historic Preservation Projects. All Work shall comply with the quality of the workmanship requirements set forth in the publication.

RYEBREAD may elect to retain the services of John Bowie, FAIA, Historical Architect, 101 East Possum Hollow Road, Wallingford, Pa. 19086 to serve as an “as-needed” resource for the historic rehabilitation portion of the Work. Mr. Bowie will act as part of the Architect’s team.

Petrographic Analysis of mortar shall not be required.

**Clarification:** (Reference to Commissioning Agent): The Contractor shall not be required to retain the services of a Commissioning Agent. However, the Owner reserves the right to retain the services of a Commissioning Agent. If the Owner hires a Commissioning Agent, the Contractor shall fully cooperate with, and aid the commissioning agent to perform the commissioning.

**Clarification:** (Reference to Order of Alternate Bids): The listing of the Alternates in the Bid Form are in numerical order of initial importance. However, the Owner reserves the right to award any or all alternates, in any order, as deemed in the Owner’s best interest, based on the availability of funding.

**Amendment:** (Reference to Engine Generator): Delete specification Section 263213-Engine Generators published in Project Manual-Volume 2.

Replace with attached specification section 263213-Engine Generator which requires a diesel generator. Natural gas engine generator is not required for this project.

**Amendment:** (Reference to Enlarged Plan EP 11, sheet A2.8): Amend all notes currently referring to the lockers as Alternate #4, to now be Alternate #5.

**Clarification:** (Reference to Alternate Bid #8): The insulation shall be min. R-30 with a vapor barrier. Insulation may be laid-in, or blown in, as appropriate with the existing conditions.

**Clarification:** (Reference to Asbestos Glazing Putty at Historic Wood Windows): The existing glazing putty at the historic wood historic windows contains asbestos-containing material and must be properly abated and lawfully disposed of.
All broken glazing on the historic windows shall be removed and replaced to match the remaining historic glazing and shall be treated as asbestos-containing material.

Follow the Asbestos Inspection Report in the Appendix for additional information.

1.28 **Clarification:** (Reference to Slide Pole Modifications, EP12/A2.8 and 03/A2.12): The slide pole to be installed in Pole Hole/208A is an existing historic slide pole from another fire building in Mount Holly. The Contractor shall be required to fully modify the existing pole, as required, to suit the new construction as referenced in the notes, including all hardware, connections, extensions, etc. to render the pole fully functional. The new gate, guards, etc. around the pole hole shall be new and procured by and installed by the Contractor.

1.29 **Amendment:** (Reference to Plan Detail 01/A1.3): Amend the fire extinguishers in Training Room/130 to now be type FE2.

1.30 **Clarification:** (Reference to Flood Gates): All flood gates shown on the drawings are the responsibility of the Owner.

1.31 **Addition:** (Reference to Specification Section 084113, ALUMINUM ENTRANCES & STOREFRONTS): Subject to compliance with the requirements, add the following manufacturer to paragraph 2.1.A:

“5. Kawneer; an Arconic Company.”

1.32 **Amendment:** (Reference to Code Review, Sheet A1.0): Amend typographical error on Table 504.6.2, Second Floor, to now read as follows:

Delete: “R-3 RESIDENTIAL (Addition) – 400 SF.”

Replace with: “R-2 RESIDENTIAL (Addition) – 400 SF.”

1.33 **Amendment:** (Reference to First Floor Plan 01/A2.2): Amend the typographical error of the wall type shown on the southern exterior wall of Training Room/130:

Delete: Wall Type noted as W813B.

Replace with: Wall Type W18.

1.34 **Amendment:** (Reference to Sheet S-2): Amend the note on Second Floor Framing Plan note as follows:

Delete Note: “4’-0” Area of roof sheathing to be replaced-coordinate with Arch’l drawings.

Replace Note with: “12′-0” area of roof sheathing to be replaced-coordinate with Arch’l drawings.
1.35 Clarification: (Reference to Hoist Beam Detail 02/Sheet A2.10): The stainless steel wall protection shown on the detail shall run from the finish floor to approx. 6’-9” above the finish floor elevation. This wall protection shall be installed on the entire southern wall the length of the room with the eyebolts and wood blocking.

1.36 Clarification: (Reference to Wall Types): All wall types shall run from finish floor tight to roof/floor decking above, including all gypsum of other wall finishes. If concealed from view, applied finishes, such as wall tiles, etc. shall be permitted to terminate approximately 6-inches above a ceiling level. Finish painting of concealed spaces shall be 6-inches above the APC ceiling.

All interior gypsum wall board shall be mold resistant per specification section 092900 Gypsum Board.

1.37 Clarification: (Reference to Specification section 090561.13, MOISTURE VAPOR EMISSION CONTROL): This specification section is applicable where the concrete slab moisture testing requirements exceed the flooring manufacturer’s requirements to permit the installation of the flooring systems. This shall apply to all installed flooring finishes specified. The installation of any MVWC system shall be coordinated with, and comply with the flooring manufacturers installation requirements.

1.38 Clarification: (Reference to Alternate Bid #5, METAL GEAR RACKS): The specified metal gear racks and all related systems and components shall be procured by and installed by the Contractor as part of the Alternate Bid.

1.39 Deletion: (Reference to Fireblocking in Concealed Spaces): At the Relief addition construction, delete all references to fire blocking in walls at 10-foot elevations. Fireblocking is not required in the addition.

1.40 Amendment/Clarification: (Reference to Aluminum Windows): Window types WD5 & WD6, shown on South Elevation 02/A2.5 are to be single-hung aluminum windows with window screens. Frame depths shall be 3¼-inch deep minimum. Finish to match the remainder of the specified windows. These windows are replacement windows and the Contractor shall remove all the existing windows, prepare the openings to receive new windows, and to field verify the dimensions prior to fabrication. Basis of Design, EFCO HX32, or alternative manufacturer equivalent products.

All specified casement and fixed window units shall be 3¼-inch deep minimum. Basis-of-Design, EFCO 325X, or alternative manufacturer equivalent products.

1.41 Clarification: (Reference to Project Allowances, Section 002000-2, Form of Bid): Contractor’s Overhead and Profit on Allowances shall be part of the Contract Sum. Delete any references to the contrary.
1.42 **Amendment:** (Reference to Amended Bid Location):

All bid proposals shall now be delivered to the office of RYEBREAD Architects, 456 High Street, Mount Holly, New Jersey 08060. For GPS, please use 488 High Street, Mount Holly, New Jersey 08060. Bids may be hand-delivered between the hours of 8:00 AM-5:00 PM Monday through Friday.

1.43 **Clarification:** Bidders will not be permitted to witness the bid opening in person. In an effort to minimize social contact, the Mount Holly Fire District #1 will conduct a video bid opening using Zoom video conferencing, where all bids will be opened and read aloud at 2:00 PM, on 09 October 2020. The video conference will open at 1:45 PM. When calling in, please immediately identify your name and Company.

Interested parties may attend the virtual meeting by adding the following URL into your computer or smartphone web browser. We recommend logging in a minimum of fifteen minutes before the Bid Opening.

Topic: MTHFIR Relief Friday, 9 October 2:00 Bid Opening
Time: Oct 9, 2020 02:00 PM Eastern Time (US and Canada)

Join Zoom Meeting
https://us02web.zoom.us/j/3553364302?pwd=MV15UWR4eXNseUx6OTU3UEthR3dmZz09

Meeting ID: 355 336 4302
Passcode: RYEBREAD
One tap mobile
+19294362866,,3553364302#,,,,0#,,478413# US (New York)
+13017158592,,3553364302#,,,,0#,,478413# US (Germantown)

Dial by your location
+1 929 436 2866 US (New York)
+1 301 715 8592 US (Germantown)
+1 312 626 6799 US (Chicago)
+1 669 900 6833 US (San Jose)
+1 253 215 8782 US (Tacoma)
+1 346 248 7799 US (Houston)

Meeting ID: 355 336 4302
Passcode: 478413
Find your local number: https://us02web.zoom.us/u/kb502W6h4a

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**ATTACHMENTS:**

2. SKE-090820-1, Revised Bollard Sketch @ Transformer & Generator Location
3. SK.01/Eave and SK.02/Peak Details-Interim Bays Addition
ADDENDUM #1
Relief Fire Company #1 Addition & Renovation
RYEBREAD Project #5475B
Relief Fire Company #1 Interim Bays
RYEBREAD Project #5475C

4. Amended Specification Section 263213, ENGINE GENERATORS.
5. Amended Interim Bays M1 and E1 drawings, dated 25 September 2020.
6. Revised Pennoni Memorandum consisting of 2 pages total.
7. Amended Pennoni site drawings, consisting of 11 sheets total.
8. Amended Kelter & Gilligo drawings, dated 25 September 2020:
   1. P-drawings: P1, P2, P3, P4, P8, P9.
   2. FP-drawings: FP1, FP3.

END OF ADDENDUM #1
SITE PLAN – ELECTRICAL

SCALE 1" = 20'–0"

REVISED BOLLARDS
SELF ADHERING SHEET UNDERLAYMENT OVER ENTIRE ROOF AREA

(1) ROW CONTIN. SNOWGUARD LOCATED & INSTALLED PER METAL ROOF MANUF.

FOLLOW STRUCTURAL DWGS. FOR ROOF TRUSS HOLD-DOWN CLIPS

METAL ROOF PANEL

5/8" PLYWOOD SHEATHING

METAL ROOF PANEL

BOTTOM CLOSURE SET IN SEALANT

METAL DRIP EDGE GUTTER STRAP PER ROOF MANUF.

BEARING 17'-0" A.F.F.

BUTYL TAPE OR SEALANT

4.5"X6" METAL GUTTER (TYP.)

FASTENERS PER ROOF MANUF.

2"X2" WOOD FASCIA W/ .040" METAL WRAP (TYP.)

2"X10" WOOD FASCIA W/ .040" METAL WRAP (TYP.)

VENTED VINYL SOFFIT OVER 3 1/2" MTL. STUD FRAMING @ 12" O/C - VERIFY DEPTH AT EAVE TO MATCH SOFFIT DEPTH AT RAKE (TYP.)
METAL ROOF PANEL
SELF ADHERING SHEET UNDERLAYMENT OVER ENTIRE ROOF AREA
5/8" PLYWOOD SHEATHING

TOP CLOSURE SET IN SEALANT
PREFORMED PEAK FASCIA
BUTYL TAPE OR SEALANT
FASTENERS PER ROOF MANUF.

2"X2" WOOD FASCIA W/ METAL WRAP (TYP.)
2"X10" WOOD FASCIA W/ METAL WRAP (TYP.)
VENTED VINYL SOFFIT OVER 3 1/2" MTL. STUD FRAMING @ 12" O/C - VERIFY DEPTH AT EAVE TO MATCH SOFFIT DEPTH AT RAKE (TYP.)
SECTION 263213 - ENGINE GENERATORS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. This Section includes packaged engine-generator sets for emergency power supply with the following features:

1. Diesel engine.
2. Unit-mounted cooling system.
4. Load banks.
5. Outdoor enclosure.

B. Related Sections include the following:

1. Division 26 Section "Transfer Switches" for transfer switches including sensors and relays to initiate automatic-starting and -stopping signals for engine-generator sets.

1.3 DEFINITIONS

A. Operational Bandwidth: The total variation from the lowest to highest value of a parameter over the range of conditions indicated, expressed as a percentage of the nominal value of the parameter.

1.4 ACTION SUBMITTALS

A. Product Data: For each type of packaged engine generator indicated. Include rated capacities, operating characteristics, and furnished specialties and accessories. In addition, include the following:

1. Thermal damage curve for generator.
2. Time-current characteristic curves for generator protective device.

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. Dimensioned outline plan and elevation drawings of engine-generator set and other components specified.
2. Design Calculations: Signed and sealed by a qualified professional engineer. Calculate requirements for selecting vibration isolators and seismic restraints and for designing vibration isolation bases.
3. Vibration Isolation Base Details: Signed and sealed by a qualified professional engineer. Detail fabrication, including anchorages and attachments to structure and to supported equipment. Include base weights.

1.5 INFORMATIONAL SUBMITTALS

A. Manufacturer Seismic Qualification Certification: Submit certification that day tank, engine-generator set, batteries, battery racks, accessories, and components will withstand seismic forces defined in Division 26 Section "Vibration and Seismic Controls for Electrical Systems." Include the following:

1. Basis for Certification: Indicate whether withstand certification is based on actual test of assembled components or on calculation.
   a. The term "withstand" means "the unit will remain in place without separation of any parts from the device when subjected to the seismic forces specified."
   b. The term "withstand" means "the unit will remain in place without separation of any parts from the device when subjected to the seismic forces specified and the unit will be fully operational after the seismic event."

2. Dimensioned Outline Drawings of Equipment Unit: Identify center of gravity and locate and describe mounting and anchorage provisions.
3. Detailed description of equipment anchorage devices on which the certification is based and their installation requirements.

B. Qualification Data: For installer, manufacturer and testing agency.

C. Drawings of the generator set.

D. The following data in tabulated form: make of engine, number of cylinders, bore, (inches/millimeters), stroke (inches/millimeters), piston displacement (cubic inches (liters), piston speed (feet per minute at rated RPM), BMEP at rated KW output, make and type of generator, generator electrical rating (KVA or KW at .8 power factor), number and type of bearing, exciter type, generator insulation class and temperature rise, parts and service support, engine manufacturer’s certified engine BHP curve and certified generator ser fuel consumption.

E. Batteries and battery charger.

F. Silencer

G. Fuel system complete.

H. Cooling system complete.

I. Exhaust system complete
J. All auxiliaries.

K. Source quality-control test reports.
   1. Certified summary of prototype-unit test report.
   2. Certified Test Reports: For components and accessories that are equivalent, but not identical, to those tested on prototype unit.
   4. Report of factory test on units to be shipped for this Project, showing evidence of compliance with specified requirements.
   6. Report of exhaust emissions showing compliance with applicable regulations.

L. Field quality-control test reports.

M. Warranty: Special warranty specified in this Section.

1.6 CLOSEOUT SUBMITTALS

A. Operation and Maintenance Data: For packaged engine generators to include in emergency, operation, and maintenance manuals. In addition to items specified in Division 01 Section "Operation and Maintenance Data," include the following:
   1. List of tools and replacement items recommended to be stored at Project for ready access. Include part and drawing numbers, current unit prices, and source of supply.

1.7 MAINTENANCE MATERIAL SUBMITTALS

A. Furnish extra materials described below that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.
   1. Fuses: One for every 10 of each type and rating, but no fewer than one of each.
   2. Indicator Lamps: Two for every six of each type used, but no fewer than two of each.
   3. Filters: One set each of lubricating oil, fuel, and combustion-air filters.

1.8 QUALITY ASSURANCE

A. Installer Qualifications: Manufacturer's authorized representative who is trained and approved for installation of units required for this Project.
   1. Maintenance Proximity: Not more than four hours' normal travel time from Installer's place of business to Project site.
   2. Engineering Responsibility: Preparation of data for vibration isolators and seismic restraints in engine skid mounts, including Shop Drawings, based on testing and engineering analysis of manufacturer's standard units in assemblies similar to those indicated for this Project.
B. Manufacturer Qualifications: A qualified manufacturer. Maintain, within 200 miles of Project site, a service center capable of providing training, parts, and emergency maintenance repairs.

C. Testing Agency Qualifications: An independent agency, with the experience and capability to conduct the testing indicated, that is a member company of the InterNational Electrical Testing Association or is a nationally recognized testing laboratory (NRTL), and that is acceptable to authorities having jurisdiction.

1. Testing Agency's Field Supervisor: Person currently certified by the InterNational Electrical Testing Association or the National Institute for Certification in Engineering Technologies to supervise on-site testing specified in Part 3.

D. Source Limitations: Obtain packaged generator sets and auxiliary components through one source from a single manufacturer.

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.

F. Comply with ASME B15.1.

G. Comply with NFPA 37.

H. Comply with NFPA 70.

I. Comply with NFPA 99.

J. Comply with NFPA 110 requirements for Level 1 emergency power supply system.

K. Comply with UL 2200.

L. Engine Exhaust Emissions: Comply with applicable state and local government requirements.

M. Noise Emission: Comply with applicable state and local government requirements for maximum noise level at adjacent property boundaries due to sound emitted by generator set including engine, engine exhaust, engine cooling-air intake and discharge, and other components of installation.

1.9 PROJECT CONDITIONS

A. Interruption of Existing Electrical Service: Do not interrupt electrical service to facilities occupied by Owner or others unless permitted under the following conditions and then only after arranging to provide temporary electrical service according to requirements indicated:

1. Notify Owner no fewer than two days in advance of proposed interruption of electrical service.

2. Do not proceed with interruption of electrical service without Owner's written permission.
B. Environmental Conditions: Engine-generator system shall withstand the following environmental conditions without mechanical or electrical damage or degradation of performance capability:

1. Ambient Temperature: Minus 15 to plus 40 deg C.
2. Relative Humidity: 0 to 95 percent.
3. Altitude: Sea level to 1000 feet.

1.10 COORDINATION

A. Coordinate size and location of concrete bases for package engine generators. Cast anchor-bolt inserts into bases. Concrete, reinforcement, and formwork requirements are specified in Division 03.

1.11 WARRANTY

1. Warranty Period: 2 years from date of Substantial Completion.

1.12 MAINTENANCE SERVICE

A. Initial Maintenance Service: Beginning at Substantial Completion, provide 12 months' full maintenance by skilled employees of manufacturer's designated service organization. Include quarterly inspection by the supplier personnel to review the bi-weekly maintenance records being kept by user and train any new owner operating personnel. Inspection will include schedules oil sampling for lube oil containments. A 100% load test run on the generator set shall also be included. Annual inspection by the supplier personnel shall include all of the items in above paragraph except that the generator set shall be run under system load.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:

B. Generator to be Kohler diesel model 200REOZJF or approved equal by:

1. Cummins/Onan
2. Generac
3. CAT
4. Or approved equal.

2.2 ENGINE-GENERATOR SET

A. Factory-assembled and -tested, engine-generator set.
B. Mounting Frame: Maintain alignment of mounted components without depending on concrete foundation; and have lifting attachments.

1. Rigging Diagram: Inscribed on metal plate permanently attached to mounting frame to indicate location and lifting capacity of each lifting attachment and generator-set center of gravity.

C. Capacities and Characteristics:

1. Power Output Ratings: Nominal ratings as indicated, with capacity as required to operate as a unit as evidenced by records of prototype testing.
2. Output Connections: Three-phase, four wire.
3. Nameplates: For each major system component to identify manufacturer's name and address, and model and serial number of component.

D. Generator-Set Performance:

1. Steady-State Voltage Operational Bandwidth: 3 percent of rated output voltage from no load to full load.
2. Transient Voltage Performance: Not more than 20 percent variation for 50 percent step-load increase or decrease. Voltage shall recover and remain within the steady-state operating band within three seconds.
3. Steady-State Frequency Operational Bandwidth: 0.5 percent of rated frequency from no load to full load.
4. Steady-State Frequency Stability: When system is operating at any constant load within the rated load, there shall be no random speed variations outside the steady-state operational band and no hunting or surging of speed.
5. Transient Frequency Performance: Less than 5 percent variation for 50 percent step-load increase or decrease. Frequency shall recover and remain within the steady-state operating band within five seconds.
6. Output Waveform: At no load, harmonic content measured line to line or line to neutral shall not exceed 5 percent total and 3 percent for single harmonics. Telephone influence factor, determined according to NEMA MG 1, shall not exceed 50 percent.
7. Sustained Short-Circuit Current: For a 3-phase, bolted short circuit at system output terminals, system shall supply a minimum of 250 percent of rated full-load current for not less than 10 seconds and then clear the fault automatically, without damage to generator system components.
8. Start Time: Comply with NFPA 110, Type 10, system requirements.

E. Generator-Set Performance for Sensitive Loads:

1. Oversizing generator compared with the rated power output of the engine is permissible to meet specified performance.

   a. Nameplate Data for Oversized Generator: Show ratings required by the Contract Documents rather than ratings that would normally be applied to generator size installed.

2. Steady-State Voltage Operational Bandwidth: 1 percent of rated output voltage from no load to full load.
3. Transient Voltage Performance: Not more than 10 percent variation for 50 percent step-load increase or decrease. Voltage shall recover and remain within the steady-state operating band within 0.5 second.

4. Steady-State Frequency Operational Bandwidth: Plus or minus 0.25 percent of rated frequency from no load to full load.

5. Steady-State Frequency Stability: When system is operating at any constant load within the rated load, there shall be no random speed variations outside the steady-state operational band and no hunting or surging of speed.

6. Transient Frequency Performance: Less than 2-Hz variation for 50 percent step-load increase or decrease. Frequency shall recover and remain within the steady-state operating band within three seconds.

7. Output Waveform: At no load, harmonic content measured line to neutral shall not exceed 2 percent total with no slot ripple. Telephone influence factor, determined according to NEMA MG 1, shall not exceed 50 percent.

8. Sustained Short-Circuit Current: For a 3-phase, bolted short circuit at system output terminals, system shall supply a minimum of 300 percent of rated full-load current for not less than 10 seconds and then clear the fault automatically, without damage to winding insulation or other generator system components.

9. Excitation System: Performance shall be unaffected by voltage distortion caused by nonlinear load.
   a. Provide permanent magnet excitation for power source to voltage regulator.

10. Start Time: Comply with NFPA 110, Type 10, system requirements.

2.3 ENGINE

A. Fuel: Diesel.

B. Rated Engine Speed: 1800 rpm.

C. Maximum Piston Speed for Four-Cycle Engines: 2250 fpm (11.4 m/s).

D. Lubrication System: The following items are mounted on engine or skid:
   1. Filter and Strainer: Rated to remove 90 percent of particles 5 micrometers and smaller while passing full flow.
   2. Thermostatic Control Valve: Control flow in system to maintain optimum oil temperature. Unit shall be capable of full flow and is designed to be fail-safe.
   3. Crankcase Drain: Arranged for complete gravity drainage to an easily removable container with no disassembly and without use of pumps, siphons, special tools, or appliances.

E. Engine Fuel System:
   2. Relief-Bypass Valve: Automatically regulates pressure in fuel line and returns excess fuel to source.
F. Coolant Jacket Heater: Electric-immersion type, factory installed in coolant jacket system. Comply with NFPA 110 requirements for Level 1 equipment for heater capacity.

G. Governor: Adjustable isochronous, with speed sensing.

H. Cooling System: Closed loop, liquid cooled, with radiator factory mounted on engine-generator-set mounting frame and integral engine-driven coolant pump.
   1. Coolant: Solution of 50 percent ethylene-glycol-based antifreeze and 50 percent water, with anticorrosion additives as recommended by engine manufacturer.
   2. Size of Radiator: Adequate to contain expansion of total system coolant from cold start to 110 percent load condition.
   3. Expansion Tank: Constructed of welded steel plate and rated to withstand maximum closed-loop coolant system pressure for engine used. Equip with gage glass and petcock.
   4. Temperature Control: Self-contained, thermostatic-control valve modulates coolant flow automatically to maintain optimum constant coolant temperature as recommended by engine manufacturer.
      a. Rating: 50-psig (345-kPa) maximum working pressure with coolant at 180 deg F (82 deg C), and noncollapsible under vacuum.
      b. End Fittings: Flanges or steel pipe nipples with clamps to suit piping and equipment connections.

I. Muffler/Silencer: Critical type, sized as recommended by engine manufacturer and selected with exhaust piping system to not exceed engine manufacturer's engine backpressure requirements.
   1. Minimum sound attenuation of 25 dB at 500 Hz.
   2. Sound level measured at a distance of 10 feet (3 m) from exhaust discharge after installation is complete shall be 85 dBA or less.

J. Muffler/Silencer: Residential type, sized as recommended by engine manufacturer and selected with exhaust piping system to not exceed engine manufacturer's engine backpressure requirements.
   1. Minimum sound attenuation of 18 dB at 500 Hz.
   2. Sound level measured at a distance of 10 feet (3 m) from exhaust discharge after installation is complete shall be 95 dBA or less.

K. Air-Intake Filter: [Heavy-duty, engine-mounted air cleaner with replaceable dry-filter element and "blocked filter" indicator.

L. Starting System: 24-V electric, with negative ground.
   1. Components: Sized so they will not be damaged during a full engine-cranking cycle with ambient temperature at maximum specified in Part 1 "Project Conditions" Article.
   2. Cranking Motor: Heavy-duty unit that automatically engages and releases from engine flywheel without binding.
   3. Cranking Cycle: As required by NFPA 110 for system level specified.
4. Battery: Adequate capacity within ambient temperature range specified in Part 1 "Project Conditions" Article to provide specified cranking cycle at least twice without recharging.
5. Battery Cable: Size as recommended by engine manufacturer for cable length indicated. Include required interconnecting conductors and connection accessories.
6. Battery Compartment: Factory fabricated of metal with acid-resistant finish and thermal insulation. Thermostatically controlled heater shall be arranged to maintain battery above 10 deg C regardless of external ambient temperature within range specified in Part 1 "Project Conditions" Article. Include accessories required to support and fasten batteries in place.
8. Battery Charger: Current-limiting, automatic-equalizing and float-charging type. Unit shall comply with UL 1236 and include the following features:
   a. Operation: Equalizing-charging rate of 10 A shall be initiated automatically after battery has lost charge until an adjustable equalizing voltage is achieved at battery terminals. Unit shall then be automatically switched to a lower float-charging mode and shall continue to operate in that mode until battery is discharged again.
   b. Automatic Temperature Compensation: Adjust float and equalize voltages for variations in ambient temperature from minus 40 deg C to plus 60 deg C to prevent overcharging at high temperatures and undercharging at low temperatures.
   c. Automatic Voltage Regulation: Maintain constant output voltage regardless of input voltage variations up to plus or minus 10 percent.
   e. Safety Functions: Sense abnormally low battery voltage and close contacts providing low battery voltage indication on control and monitoring panel. Sense high battery voltage and loss of ac input or dc output of battery charger. Either condition shall close contacts that provide a battery-charger malfunction indication at system control and monitoring panel.
   f. Enclosure and Mounting: NEMA 250, Type 1, wall-mounted cabinet.

2.4 CONTROL AND MONITORING

A. Automatic Starting System Sequence of Operation: When mode-selector switch on the control and monitoring panel is in the automatic position, remote-control contacts in one or more separate automatic transfer switches initiate starting and stopping of generator set. When mode-selector switch is switched to the on position, generator set starts. The off position of same switch initiates generator-set shutdown. When generator set is running, specified system or equipment failures or derangements automatically shut down generator set and initiate alarms. Operation of a remote emergency-stop switch also shuts down generator set.

B. Manual Starting System Sequence of Operation: Switching on-off switch on the generator control panel to the on position starts generator set. The off position of same switch initiates generator-set shutdown. When generator set is running, specified system or equipment failures or derangements automatically shut down generator set and initiate alarms. Operation of a remote emergency-stop switch also shuts down generator set.
C. Configuration: Operating and safety indications, protective devices, basic system controls, and engine gages shall be grouped in a common control and monitoring panel mounted on the generator set. Mounting method shall isolate the control panel from generator-set vibration.

D. Configuration: Operating and safety indications, protective devices, basic system controls, and engine gages shall be grouped in a common wall-mounted control and monitoring panel.

E. Configuration: Operating and safety indications, protective devices, basic system controls, engine gages, instrument transformers, generator disconnect switch or circuit breaker, and other indicated components shall be grouped in a combination control and power panel. Control and monitoring section of panel shall be isolated from power sections by steel barriers. Panel features shall include the following:

2. Switchboard Construction: Freestanding unit complying with Division 26 Section "Switchboards."
3. Switchgear Construction: Freestanding unit complying with Division 26 Section "Low-Voltage Switchgear."

F. Indicating and Protective Devices and Controls: As required by NFPA 110 for Level 1 system, and the following:

1. AC voltmeter.
2. AC ammeter.
3. AC frequency meter.
4. DC voltmeter (alternator battery charging).
5. Engine-coolant temperature gage.
6. Engine lubricating-oil pressure gage.
7. Running-time meter.
9. Generator-voltage adjusting rheostat.
10. Fuel tank derangement alarm.
11. Fuel tank high-level shutdown of fuel supply alarm.
12. Generator overload.

G. Indicating and Protective Devices and Controls:

1. AC voltmeter.
2. AC ammeter.
3. AC frequency meter.
4. DC voltmeter (alternator battery charging).
5. Engine-coolant temperature gage.
6. Engine lubricating-oil pressure gage.
7. Running-time meter.
9. Generator-voltage adjusting rheostat.
10. Start-stop switch.
11. Overspeed shutdown device.
12. Coolant high-temperature shutdown device.
13. Coolant low-level shutdown device.
14. Oil low-pressure shutdown device.
15. Fuel tank derangement alarm.
16. Fuel tank high-level shutdown of fuel supply alarm.
17. Generator overload.

H. Supporting Items: Include sensors, transducers, terminals, relays, and other devices and include wiring required to support specified items. Locate sensors and other supporting items on engine or generator, unless otherwise indicated.

I. Connection to Data Link: A separate terminal block, factory wired to Form C dry contacts, for each alarm and status indication is reserved for connections for data-link transmission of indications to remote data terminals. Data system connections to terminals are covered in Division 26 Section "Electrical Power Monitoring and Control."

J. Common Remote Audible Alarm: Comply with NFPA 110 requirements for Level 1 systems. Include necessary contacts and terminals in control and monitoring panel.
   1. Overcrank shutdown.
   2. Coolant low-temperature alarm.
   3. Control switch not in auto position.
   4. Battery-charger malfunction alarm.
   5. Battery low-voltage alarm.

K. Common Remote Audible Alarm: Signal the occurrence of any events listed below without differentiating between event types. Connect so that after an alarm is silenced, clearing of initiating condition will reactivate alarm until silencing switch is reset.
   1. Engine high-temperature shutdown.
   2. Lube-oil, low-pressure shutdown.
   3. Overspeed shutdown.
   5. Engine high-temperature prealarm.
   6. Lube-oil, low-pressure prealarm.
   7. Fuel tank, low-fuel level.
   8. Low coolant level.

L. Remote Alarm Annunciator: Comply with NFPA 99. An LED labeled with proper alarm conditions shall identify each alarm event and a common audible signal shall sound for each alarm condition. Silencing switch in face of panel shall silence signal without altering visual indication. Connect so that after an alarm is silenced, clearing of initiating condition will reactivate alarm until silencing switch is reset. Cabinet and faceplate are surface- or flush-mounting type to suit mounting conditions indicated.

M. Remote Emergency-Stop Switch: Flush; wall mounted, unless otherwise indicated; and labeled. Push button shall be protected from accidental operation.
2.5 GENERATOR OVERCURRENT AND FAULT PROTECTION

A. Generator Circuit Breaker: A generator mounted main line circuit breaker shall be provided. It shall operate both manually for normal switching function and automatically during overload and short circuit conditions, and shall be arranged for easy installation of by-pass jumper. Provide auxiliary contacts in breaker to close and energize alarm when breaker contacts open.

B. Generator Disconnect Switch: Molded-case type, 100 percent rated.
   1. Rating: Matched to generator output rating.
   2. Shunt Trip: Connected to trip switch when signaled by generator protector or by other protective devices.

C. Generator Protector: Microprocessor-based unit shall continuously monitor current level in each phase of generator output, integrate generator heating effect over time, and predict when thermal damage of alternator will occur. When signaled by generator protector or other generator-set protective devices, a shunt-trip device in the generator disconnect switch shall open the switch to disconnect the generator from load circuits. Protector shall perform the following functions:
   1. Initiates a generator overload alarm when generator has operated at an overload equivalent to 110 percent of full-rated load for 60 seconds. Indication for this alarm is integrated with other generator-set malfunction alarms.
   2. Under single or three-phase fault conditions, regulates generator to 300 percent of rated full-load current for up to 10 seconds.
   3. As overcurrent heating effect on the generator approaches the thermal damage point of the unit, protector switches the excitation system off, opens the generator disconnect device, and shuts down the generator set.
   4. Senses clearing of a fault by other overcurrent devices and controls recovery of rated voltage to avoid overshoot.

2.6 GENERATOR, EXCITER, AND VOLTAGE REGULATOR

A. Comply with NEMA MG 1.

B. Drive: Generator shaft shall be directly connected to engine shaft. Exciter shall be rotated integrally with generator rotor.

C. Electrical Insulation: Class F.

D. Stator-Winding Leads: Brought out to terminal box to permit future reconnection for other voltages if required.

E. Construction shall prevent mechanical, electrical, and thermal damage due to vibration, over speed up to 125 percent of rating, and heat during operation at 110 percent of rated capacity.

F. Enclosure: Drip proof.

G. Instrument Transformers: Mounted within generator enclosure.
H. Voltage Regulator: Solid-state type, separate from exciter, providing performance as specified.
   1. Adjusting rheostat on control and monitoring panel shall provide plus or minus 5 percent adjustment of output-voltage operating band.

I. Strip Heater: Thermostatically controlled unit arranged to maintain stator windings above dew point.

J. Windings: Two-thirds pitch stator winding and fully linked amortisseur winding.

K. Sub transient Reactance: 12 percent, maximum.

2.7 OUTDOOR GENERATOR-SET ENCLOSURE

A. Description: Vandal-resistant, weatherproof steel housing, wind resistant up to 100 mph (160 km/h). Multiple panels shall be lockable and provide adequate access to components requiring maintenance. Panels shall be removable by one person without tools. Instruments and control shall be mounted within enclosure.

B. Description: Prefabricated or pre-engineered walk-in enclosure with the following features:
   2. Structural Design and Anchorage: Comply with ASCE 7 for wind loads.
   3. Space Heater: Thermostatically controlled and sized to prevent condensation.
   4. Louvers: Equipped with bird screen and filter arranged to permit air circulation when engine is not running while excluding exterior dust, birds, and rodents.
   6. Ventilation: Louvers equipped with bird screen and filter arranged to permit air circulation while excluding exterior dust, birds, and rodents.
   7. Thermal Insulation: Manufacturer's standard materials and thickness selected in coordination with space heater to maintain winter interior temperature within operating limits required by engine-generator-set components.
   8. Muffler Location: Within enclosure.

C. Engine Cooling Airflow through Enclosure: Maintain temperature rise of system components within required limits when unit operates at 110 percent of rated load for 2 hours with ambient temperature at top of range specified in system service conditions.
   1. Louvers: Fixed-engine, cooling-air inlet and discharge. Storm-proof and drainable louvers prevent entry of rain and snow.
   2. Automatic Dampers: At engine cooling-air inlet and discharge. Dampers shall be closed to reduce enclosure heat loss in cold weather when unit is not operating.

D. Interior Lights with Switch: Factory-wired, vaporproof-type fixtures within housing; arranged to illuminate controls and accessible interior. Arrange for external electrical connection.
   1. AC lighting system and connection point for operation when remote source is available.
   2. DC lighting system for operation when remote source and generator are both unavailable.
E. Convenience Outlets: Factory wired, GFCI. Arrange for external electrical connection.

2.8 MOTORS

A. General requirements for motors are specified in Division 23 Section "Common Motor Requirements for HVAC Equipment."

1. Motor Sizes: Minimum size as indicated. If not indicated, large enough so driven load will not require motor to operate in service factor range above 1.0.
2. Controllers, Electrical Devices, and Wiring: Electrical devices and connections are specified in Division 26 Sections.

2.9 VIBRATION ISOLATION DEVICES

A. Elastomeric Isolator Pads: Oil- and water-resistant elastomer or natural rubber, arranged in single or multiple layers, molded with a nonslip pattern and galvanized-steel baseplates of sufficient stiffness for uniform loading over pad area, and factory cut to sizes that match requirements of supported equipment.

3. Number of Layers: One.

B. Restrained Spring Isolators: Freestanding, steel, open-spring isolators with seismic restraint.

1. Housing: Steel with resilient vertical-limit stops to prevent spring extension due to wind loads or if weight is removed; factory-drilled baseplate bonded to 1/4-inch- (6-mm-) thick, elastomeric isolator pad attached to baseplate underside; and adjustable equipment mounting and leveling bolt that acts as blocking during installation.
2. Outside Spring Diameter: Not less than 80 percent of compressed height of the spring at rated load.
3. Minimum Additional Travel: 50 percent of required deflection at rated load.
4. Lateral Stiffness: More than 80 percent of rated vertical stiffness.
5. Overload Capacity: Support 200 percent of rated load, fully compressed, without deformation or failure.

2.10 FINISHES

A. Indoor and Outdoor Enclosures and Components: Manufacturer's standard finish over corrosion-resistant pretreatment and compatible primer.

2.11 SOURCE QUALITY CONTROL

A. Prototype Testing: Factory test engine-generator set using same engine model, constructed of identical or equivalent components and equipped with identical or equivalent accessories.

B. Project-Specific Equipment Tests: Before shipment, factory test engine-generator set and other system components and accessories manufactured specifically for this Project. Perform tests at rated load and power factor. Include the following tests:

1. Test components and accessories furnished with installed unit that are not identical to those on tested prototype to demonstrate compatibility and reliability.
2. Full load run.
3. Maximum power.
4. Voltage regulation.
5. Transient and steady-state governing.
7. Safety shutdown.
8. Provide 14 days' advance notice of tests and opportunity for observation of tests by Owner's representative.
9. Report factory test results within 10 days of completion of test.

2.12 SUB-BASE FUEL TANK

A. Doubled-walled, UL listed. Tank capacity shall be a minimum of capable of providing 24 hours of full load run time.

B. Subbase fuel tank shall be 12-gauge steel with 7-gauge channel side supports, painted with primer and finish coat of enamel.

C. Subbase fuel tank shall be fully compatible with specified emergency generator.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine areas, equipment bases, and conditions, with Installer present, for compliance with requirements for installation and other conditions affecting packaged engine-generator performance.

B. Examine roughing-in of piping systems and electrical connections. Verify actual locations of connections before packaged engine-generator installation.

C. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION

A. Comply with packaged engine-generator manufacturers' written installation and alignment instructions and with NFPA 110.
B. Install packaged engine generator to provide access, without removing connections or accessories, for periodic maintenance.

C. Install packaged engine generator with restrained spring isolators having a minimum deflection of 1 inch on 4-inch high concrete base. Secure sets to anchor bolts installed in concrete bases. Concrete base construction is specified in Division 26 Section "Vibration and Seismic Controls for Electrical Systems."

D. Install Schedule 40, black steel piping with welded joints and connect to engine muffler. Install thimble at wall. Piping shall be same diameter as muffler outlet. Flexible connectors and steel piping materials and installation requirements are specified in Division 23 Section "Hydronic Piping."

   1. Install condensate drain piping to muffler drain outlet full size of drain connection with a shutoff valve, stainless-steel flexible connector, and Schedule 40, black steel pipe with welded joints. Flexible connectors and piping materials and installation requirements are specified in Division 23 Section "Hydronic Piping."

E. Electrical Wiring: Install electrical devices furnished by equipment manufacturers but not specified to be factory mounted.

3.3 CONNECTIONS

A. Piping installation requirements are specified in Division 23 Sections. Drawings indicate general arrangement of piping and specialties.

B. Connect fuel, cooling-system, and exhaust-system piping adjacent to packaged engine generator to allow service and maintenance.

C. Connect engine exhaust pipe to engine with flexible connector.

D. Connect fuel piping to engines with a gate valve and union and flexible connector.

E. Ground equipment according to Division 26 Section "Grounding and Bonding for Electrical Systems."

F. Connect wiring according to Division 26 Section "Low-Voltage Electrical Power Conductors and Cables."

3.4 IDENTIFICATION

A. Identify system components according to Division 23 Section "Identification for HVAC Piping and Equipment" and Division 26 Section "Identification for Electrical Systems."

3.5 FIELD QUALITY CONTROL

A. Testing Agency: Engage a qualified testing agency to perform tests and inspections and prepare test reports.
B. Manufacturer's Field Service: Engage a factory-authorized service representative to inspect, test, and adjust components, assemblies, and equipment installations, including connections. Report results in writing.

C. Perform tests and inspections and prepare test reports.

1. Manufacturer's Field Service: Engage a factory-authorized service representative to inspect components, assemblies, and equipment installations, including connections, and to assist in testing.

D. Tests and Inspections:

1. Perform tests recommended by manufacturer and each electrical test and visual and mechanical inspection for "AC Generators and for Emergency Systems" specified in NETA Acceptance Testing Specification. Certify compliance with test parameters.
2. NFPA 110 Acceptance Tests: Perform tests required by NFPA 110 that are additional to those specified here including, but not limited to, single-step full-load pickup test.
3. Battery Tests: Equalize charging of battery cells according to manufacturer's written instructions. Record individual cell voltages.
   a. Measure charging voltage and voltages between available battery terminals for full-charging and float-charging conditions. Check electrolyte level and specific gravity under both conditions.
   b. Test for contact integrity of all connectors. Perform an integrity load test and a capacity load test for the battery.
   c. Verify acceptance of charge for each element of the battery after discharge.
   d. Verify that measurements are within manufacturer's specifications.
4. Battery-Charger Tests: Verify specified rates of charge for both equalizing and float-charging conditions.
5. System Integrity Tests: Methodically verify proper installation, connection, and integrity of each element of engine-generator system before and during system operation. Check for air, exhaust, and fluid leaks.
6. Exhaust-System Back-Pressure Test: Use a manometer with a scale exceeding 40-inch wg (120 kPa). Connect to exhaust line close to engine exhaust manifold. Verify that back pressure at full-rated load is within manufacturer's written allowable limits for the engine.
7. Exhaust Emissions Test: Comply with applicable government test criteria.
8. Voltage and Frequency Transient Stability Tests: Use recording oscilloscope to measure voltage and frequency transients for 50 and 100 percent step-load increases and decreases, and verify that performance is as specified.
9. Harmonic-Content Tests: Measure harmonic content of output voltage under 25 percent and at 100 percent of rated linear load. Verify that harmonic content is within specified limits.
10. Noise Level Tests: Measure A-weighted level of noise emanating from generator-set installation, including engine exhaust and cooling-air intake and discharge, at four locations on the property line, and compare measured levels with required values.

E. Coordinate tests with tests for transfer switches and run them concurrently.
F. Test instruments shall have been calibrated within the last 12 months, traceable to standards of NIST, and adequate for making positive observation of test results. Make calibration records available for examination on request.

G. Leak Test: After installation, charge system and test for leaks. Repair leaks and retest until no leaks exist.

H. Operational Test: After electrical circuitry has been energized, start units to confirm proper motor rotation and unit operation.

I. Test and adjust controls and safeties. Replace damaged and malfunctioning controls and equipment.

J. Remove and replace malfunctioning units and retest as specified above.

K. Retest: Correct deficiencies identified by tests and observations and retest until specified requirements are met.

L. Report results of tests and inspections in writing. Record adjustable relay settings and measured insulation resistances, time delays, and other values and observations. Attach a label or tag to each tested component indicating satisfactory completion of tests.

M. Infrared Scanning: After Substantial Completion, but not more than 60 days after Final Acceptance, perform an infrared scan of each power wiring termination and each bus connection. Remove all access panels so terminations and connections are accessible to portable scanner.

1. Follow-up Infrared Scanning: Perform an additional follow-up infrared scan 11 months after date of Substantial Completion.

2. Instrument: Use an infrared scanning device designed to measure temperature or to detect significant deviations from normal values. Provide calibration record for device.

3. Record of Infrared Scanning: Prepare a certified report that identifies terminations and connections checked and that describes scanning results. Include notation of deficiencies detected, remedial action taken, and observations after remedial action.

3.6 DEMONSTRATION

A. Engage a factory-authorized service representative to train Owner's maintenance personnel to adjust, operate, and maintain packaged engine generators. Refer to Division 01 Section "Demonstration and Training."

END OF SECTION 263213
MEMORANDUM

TO: All Bidders
FROM: Hugh J. Dougherty
DATE: 09/25/20

SUBJECT: Mount Holly – Fire District - Bid Addendum Bulletin #1

The following changes have been made to the Plans entitled, “Relief Fire Company No. 1 Addition / Renovation” plans.

<table>
<thead>
<tr>
<th>SHEET</th>
<th>REVISION DATE / DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>CS0001</td>
<td>09/25/2020 –</td>
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<tr>
<td></td>
<td>• Added 200’ list.</td>
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<td></td>
<td>• Added Utility list.</td>
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<td></td>
<td>• Sheet List title change.</td>
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<tr>
<td>CS0002</td>
<td>09/25/2020 –</td>
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<tr>
<td></td>
<td>• No changes after 08/28/2020.</td>
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<tr>
<td>CS0501</td>
<td>09/25/2020 –</td>
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<tr>
<td></td>
<td>• Revised Title name. An additional document titled “Topographic &amp; Boundary Survey”, V0501, dated 03/03/2016 is being provided</td>
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<tr>
<td></td>
<td>• Removal of auxiliary buildings that were already removed from plans.</td>
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<tr>
<td></td>
<td>• Modified light removal callouts.</td>
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<tr>
<td></td>
<td>• Additional callouts for gutter removal and protection of lights.</td>
</tr>
<tr>
<td></td>
<td>• Removal of property bearing and distances from plans.</td>
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<tr>
<td></td>
<td>• Included overhead electrical line to plans.</td>
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<td>• Included salvage existing sign callouts.</td>
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<tr>
<td>CS1001</td>
<td>09/25/2020 –</td>
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<tr>
<td></td>
<td>• Revised Zone R-1 &amp; R-3 table.</td>
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<tr>
<td></td>
<td>• Modified callouts for vertical curb and gutter to be added to plans.</td>
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<tr>
<td></td>
<td>• Modified CMU/STUCCO screen wall callout.</td>
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<tr>
<td></td>
<td>• Included dimensions on HD concrete pads and unit paver area.</td>
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<tr>
<td></td>
<td>• Additional callouts for 4’x4’ pad concrete was added to the plans.</td>
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<tr>
<td></td>
<td>• Added “Lawn Area” Callout.</td>
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<td></td>
<td>• Added condensing unit to site plan.</td>
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<td></td>
<td>• Added “Reset Utility Box” callout.</td>
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<td>• Modified Pine Street driveway entrance.</td>
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<td></td>
<td>• Included callout for heavy-duty limit line at the south section of paving.</td>
</tr>
<tr>
<td>CS1501</td>
<td>09/25/2020 –</td>
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</tbody>
</table>
MHFC15000

- Included callouts for main entrance steps and proposed building with finish floor elevation.
- Included new emergency spillway alignment.
- Revised grading at Pine Street entrance driveway.

CS1901 09/25/2020 –
- Added call out for condensing unit.

CS2001 09/25/2020 –
- Modified Stone Trip Detail

CS2201 09/25/2020 –
- Included property limits on plan.
- Replace 4000k LED pole and wallpacks fixtures with 3000k LED fixtures.
- Revised light schedule.
- Added soffit light cut sheet.

CS6001 09/25/2020 –
- Revised Driveway Apron detail.

CS6002 09/25/2020 –
- Modified ADA Curb Ramp detail.

CS6003 09/25/2020 –
- No changes after 08/28/2020.

CS8001 09/25/2020 –
- No changes after 08/28/2020.

CS8501 09/25/2020 –
- No changes after 08/28/2020.

CS8502 09/25/2020 –
- No changes after 08/28/2020.

Additional Documentation
Topographic & Boundary Survey, V0501, dated 03/03/2016.

Request for Information submitted by Flatiron building Company, dated 9/22/2020

#2 Please clarify the extent of new Heavy-Duty Asphalt Paving along the lower right corner of the property as shown on Drawing CM1001. Is the intent to only fill the two small areas where concrete curbing has been removed at islands? Does the existing parking lot get milled and an overlay?

Response: The Heavy-duty paving limit has been added the plans. See sheet CM1001. The two small areas are the only areas getting replaced with Heavy-duty paving on lot 21. The existing parking lot will not be milled or overlayed.

#3 Does the area within the Generator Pad and Transformer Pad get grassed?

Response: The area around the Generator pad and transformer is to be grass.
Diagram and Schedules - Electrical
Page 3 of 3

FIRE PROTECTION SYMBOL SET

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>Sprinkler Head</td>
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<tr>
<td>B</td>
<td>Water Supply</td>
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<tr>
<td>C</td>
<td>Alarm Valve</td>
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<tr>
<td>D</td>
<td>Check Valve</td>
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<td>E</td>
<td>Air Valve</td>
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<td>F</td>
<td>Pre-Action Valve</td>
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<td>G</td>
<td>Fire Sprinkler</td>
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<td>H</td>
<td>Fire Hose</td>
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<td>I</td>
<td>Fire Alarm</td>
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<tr>
<td>J</td>
<td>Fire Sprinkler System</td>
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<td>K</td>
<td>Fire Hose System</td>
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<tr>
<td>L</td>
<td>Fire Alarm System</td>
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<tr>
<td>M</td>
<td>Fire Protection System</td>
</tr>
</tbody>
</table>

FIRE PROTECTION ABBREVIATIONS

1. Sprinkler
2. Water Supply
3. Alarm Valve
4. Check Valve
5. Air Valve
6. Pre-Action Valve
7. Fire Sprinkler
8. Fire Hose
9. Fire Alarm
10. Fire Sprinkler System
11. Fire Hose System
12. Fire Alarm System
13. Fire Protection System

FIRST FLOOR PLAN - FIRE PROTECTION

MECHANICAL ROOM 120 - FIRE PROTECTION

PRE-ACTION VALVE ASSEMBLY DETAIL