

ADDENDUM NO.1

Eddystone Borough - Municipal Building Renovations

February 9, 2023

The following are revisions, clarifications, or additions to the contract drawings for the above referenced project:

All 4 existing stair tower doors have been added to the door schedule, please see revised door schedule for door sizing and hardware.

Walls at Borough and Police secretary have been updated and modified to include Level 3 Bullet protection.

- 1) Question: Electrical specifications 263213, calls for diesel engine gen set. Single line on E-6 calls for a natural gas generator. Please clarify.

Answer: Specifications have been updated to match the Natural Gas Generator

- 2) Question: There is an ATS shown on the single line drawing, but no specification. Please clarify.

Answer: Attached please find a specification for the ATS

- 3) Question: Public meeting room you show (6) 2x2 lights as A-1 should it be B-1 or H fixture

Answer: Fixtures shall be B-1

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SECTION 263213.16 – GASEOUS EMERGENCY 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. Section includes packaged engine generators for emergency use with the following features:
 - 1. Natural gas engine.
 - 2. Gaseous fuel system.
 - 3. Control and monitoring.
 - 4. Generator overcurrent and fault protection.
 - 5. Generator, exciter, and voltage regulator.
 - 6. Outdoor engine generator enclosure.
 - 7. Vibration isolation devices.
 - 8. Finishes.
- B. Related Requirements:
 - 1. Section 263600 "Transfer Switches" for transfer switches including sensors and relays to initiate automatic-starting and -stopping signals for engine generators.

1.3 DEFINITIONS

- A. EPS: Emergency power supply.
- B. EPSS: Emergency power supply system.
- C. 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 product.
 - 1. Include rated capacities, operating characteristics, electrical characteristics, and furnished specialties and accessories.
 - 2. Include thermal damage curve for generator.
 - 3. Include time-current characteristic curves for generator protective device.
 - 4. Include fuel consumption in cubic feet per hour at 0.8 power factor at 0.5, 0.75, and 1.0 times generator capacity.
 - 5. Include generator efficiency at 0.8 power factor at 0.5, 0.75, and 1.0 times generator capacity.
 - 6. Include airflow requirements for cooling and combustion air in cubic feet per minute at 0.8 power factor, with air-supply temperature of 95, 80, 70, and 50 deg F. Provide Drawings indicating requirements and limitations for location of air intake and exhausts.
 - 7. Include generator characteristics, including, but not limited to, kilowatt rating, efficiency, reactance's, and short-circuit current capability.

B. Shop Drawings:

1. Include plans and elevations for engine generator and other components specified.
2. Include details of equipment assemblies. Indicate dimensions, weights, loads, required clearances, method of field assembly, components, and location and size of each field connection.
3. Identify fluid drain ports and clearance requirements for proper fluid drain.
4. Design calculations for selecting vibration isolators and seismic restraints and for designing vibration isolation bases.
5. Vibration Isolation Base Details: Detail fabrication, including anchorages and attachments to structure and supported equipment. Include base weights.
6. Include diagrams for power, signal, and control wiring. Complete schematic, wiring, and interconnection diagrams showing terminal markings for EPS equipment and functional relationship between all electrical components.

1.5 INFORMATIONAL SUBMITTALS**A. Qualification Data:** For manufacturer.**B. Source Quality-Control Reports:** Including, but not limited to, the following:

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.
3. Certified Summary of Performance Tests: Certify compliance with specified requirement to meet performance criteria for sensitive loads.
4. Report of factory test on units to be shipped for this Project, showing evidence of compliance with specified requirements.
5. Report of sound generation.
6. Report of exhaust emissions showing compliance with applicable regulations.
7. Certified Torsional Vibration Compatibility: Comply with NFPA 110.

C. Field quality-control reports.**D. Warranty:** For special warranty.**1.6 CLOSEOUT SUBMITTALS****A. Operation and Maintenance Data:** For packaged engine generators to include in emergency, operation, and maintenance manuals.

1. In addition to items specified in Section 017823 "Operation and Maintenance Data," include the following:
 - a. 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.
 - b. Operating instructions laminated and mounted adjacent to generator location.
 - c. Training plan.

1.7 MAINTENANCE MATERIAL SUBMITTALS**A. Furnish extra materials 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.
4. Tools: Each tool listed by part number in operations and maintenance manual.

1.8 QUALITY ASSURANCE

- A. Installer Qualifications: An authorized representative who is trained and approved by manufacturer.
- B. Testing Agency Qualifications: Accredited by NETA.
 1. Testing Agency's Field Supervisor: Certified by NETA to supervise on-site testing.

1.9 WARRANTY

- A. Manufacturer's Warranty: Manufacturer agrees to repair or replace components of packaged engine generators and associated auxiliary components that fail in materials or workmanship within specified warranty period.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 1. Caterpillar, Inc.; Electric Power Division.
 2. Cummins Power Generation.
 3. Generac Power Systems, Inc.
 4. Kohler Power Systems.
 5. MTU America Inc.
- B. Source Limitations: Obtain packaged engine generators and auxiliary components from single source from single manufacturer.

2.2 PERFORMANCE REQUIREMENTS

- A. B11 Compliance: Comply with B11.19.
- B. NFPA Compliance:
 1. Comply with NFPA 37.
 2. Comply with NFPA 70.
 3. Retain first subparagraph below for healthcare facilities.
 4. Comply with NFPA 99.
 5. Retain subparagraph below if generator is automatically started. See the Evaluations for discussion of emergency generator level requirements.
 6. Comply with NFPA 110 requirements for Level 1 EPSS.
- C. UL Compliance: Comply with UL 2200.
- D. Engine Exhaust Emissions: Comply with EPA Tier 4 requirements and applicable state and local government requirements.
- E. Noise Emission: Comply with applicable state and local government requirements for maximum noise level at adjacent property boundaries due to sound emitted by engine generator, including

engine, engine exhaust, engine cooling-air intake and discharge, and other components of installation.

- F. Environmental Conditions: Engine generator system shall withstand the following environmental conditions without mechanical or electrical damage or degradation of performance capability:
1. Ambient Temperature: 5 to 104 deg F.
 2. Relative Humidity: Zero to 95 percent.
 3. Altitude: Sea level to 1000 feet.

2.3 ENGINE GENERATOR ASSEMBLY DESCRIPTION

- A. Factory-assembled and -tested, water-cooled engine, with brushless generator and accessories.
- B. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and use.
- C. "Class," as used in "EPSS Class" Paragraph below, refers to the number of hours the EPSS is required to operate at full load without refueling. Coordinate with seismic design criteria. NFPA 110 requires seismic Categories C, D, E, and F
- D. EPSS Class: Engine generator shall be classified as Class 96 according to NFPA 110.
- E. Service Load: 60 kVA.
- F. Power Factor: 0.8, lagging.
- G. Frequency: 60 Hz.
- H. Voltage: 240/120-V ac.
- I. Phase: Single-phase, three-wire wye.
- J. Governor: Adjustable isochronous, with speed sensing.
- K. Mounting Frame: Structural-steel framework to maintain alignment of mounted components without depending on concrete foundation. Provide lifting attachments sized and spaced to prevent deflection of base during lifting and moving.
1. Rigging Diagram: Inscribed on metal plate permanently attached to mounting frame to indicate location and lifting capacity of each lifting attachment and engine generator center of gravity.
- L. Capacities and Characteristics:
1. Power Output Ratings: Nominal ratings as indicated at 0.8 power factor excluding power required for the continued and repeated operation of the unit and auxiliaries, with capacity as required to operate as a unit as evidenced by records of prototype testing.
 2. Nameplates: For each major system component to identify manufacturer's name and address, and model and serial number of component.
- M. Engine Generator 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 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.

2.4 ENGINE

- A. Fuel: Natural gas.
- B. Rated Engine Speed: 1800 rpm.
- C. Lubrication System: Engine or skid mounted.
 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.
- D. Jacket Coolant Heater: Electric-immersion type, factory installed in coolant jacket system. Comply with NFPA 110 requirements for Level 1 equipment for heater capacity and with UL 499.
- E. Cooling System: Closed loop, liquid cooled, with radiator factory mounted on engine generator 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. Retain "Size of Radiator" or "Expansion Tank" Subparagraph below. Retain second subparagraph if containment of coolant expansion by radiator is marginal or inadequate. Coordinate with Drawings.
 3. Size of Radiator: Adequate to contain expansion of total system coolant, from cold start to 110 percent load condition.
 4. 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.
 5. Temperature Control: Self-contained, thermostatic-control valve modulates coolant flow automatically to maintain optimum constant coolant temperature as recommended by engine manufacturer.
 6. Coolant Hose: Flexible assembly with inside surface of nonporous rubber and outer covering of aging-, UV-, and abrasion-resistant fabric.
 - a. Rating: 50-psig maximum working pressure with coolant at 180 deg F, and noncollapsible under vacuum.
 - b. End Fittings: Flanges or steel pipe nipples with clamps to suit piping and equipment connections.
- F. 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 25 feet from exhaust discharge after installation is complete shall be 78 dBA or City Philadelphia requirements.
- G. Air-Intake Filter: Heavy-duty, engine-mounted air cleaner with replaceable dry-filter element and "blocked filter" indicator.
- H. Starting System: 12-V electric, with negative ground.
1. Components: Sized so they are not damaged during a full engine-cranking cycle, with ambient temperature at maximum specified in "Performance Requirements" Article.
 2. Cranking Motor: Heavy-duty unit that automatically engages and releases from engine fly-wheel without binding.
 3. Cranking Cycle: As required by NFPA 110 for system level specified.
 4. First option in "Battery" Subparagraph below complies with NFPA 110 requirements. Second
 5. Battery: Lead acid, with capacity within ambient temperature range specified in "Performance Requirements" Article to provide specified cranking cycle at least three times without recharging.
 6. Battery Cable: Size as recommended by engine manufacturer for cable length indicated. Include required interconnecting conductors and connection accessories.
 7. Battery Stand: Factory-fabricated, two-tier metal with acid-resistant finish designed to hold the quantity of battery cells required and to maintain the arrangement to minimize lengths of battery interconnections.
 8. Battery-Charging Alternator: Factory mounted on engine with solid-state voltage regulation and 35-A minimum continuous rating.
 9. Battery Charger: Current-limiting, automatic-equalizing and float-charging type designed for lead-acid batteries. 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 to 140 deg F 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.
 - d. Ammeter and Voltmeter: Flush mounted in door. Meters shall indicate charging rates.
 - e. "Safety Functions" Subparagraph below covers sensing for safety indications on control and monitoring panel. NFPA 110 requires sensing for Level 1 systems and makes sensing optional for Level 2 systems. See the Evaluations for discussion of emergency generator level requirements.
 - f. 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.
 - g. Enclosure and Mounting: NEMA 250, Type 1, wall-mounted cabinet.

2.5 GASEOUS FUEL SYSTEM

- A. Gas Train: Comply with NFPA 37.

B. Engine Fuel System:

1. Natural Gas, Vapor-Withdrawal System:
 - a. Carburetor.
 - b. Secondary Gas Regulators: One for each fuel type, with atmospheric vents piped to building exterior.
 - c. Fuel-Shutoff Solenoid Valves: NRTL-listed, normally closed, safety shutoff valves; one for each fuel source.
2. Fuel Filters: One for each fuel type.
3. Manual Fuel Shutoff Valves: One for each fuel type.
4. Flexible Fuel Connectors: Minimum one for each fuel connection.

2.6 CONTROL AND MONITORING

- A. This article specifies the subsystem that monitors, protects, and controls the engine generator. See the Evaluations for more discussion of control and monitoring panels.
- B. 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 engine generator. When mode-selector switch is switched to the on position, engine generator starts. The off position of same switch initiates engine generator shutdown. When engine generator is running, specified system or equipment failures or derangements automatically shut down engine generator and initiate alarms.
- C. NFPA 110, Ch. 8, requires a minimum of 30 minutes' run time under loading that either maintains manufacturer-recommended minimum gas temperatures or 30 percent nameplate rating for each monthly test.
- D. Provide minimum run-time control set for 30 minutes, with override only by operation of a remote emergency-stop switch.
- E. Comply with UL 508A.
- F. 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 engine generator. Mounting method shall isolate the control panel from engine generator vibration. Panel shall be powered from the engine generator battery.
- G. Control and Monitoring Panel:
 1. Retain one of or both of first two subparagraphs below. First is for an integrated digital controller; second is for an analog controller.
 2. Digital controller with integrated LCD display, controls, and microprocessor, capable of local and remote control, monitoring, and programming, with battery backup.
 3. Analog control panel with dedicated gages and indicator lights for the instruments and alarms indicated below.
 4. Instruments: Located on the control and monitoring panel and viewable during operation.
 - a. Engine lubricating-oil pressure gage.
 - b. Engine-coolant temperature gage.
 - c. DC voltmeter (alternator battery charging).
 - d. Running-time meter.
 - e. AC voltmeter, connected to a phase selector switch.
 - f. AC ammeter, connected to a phase selector switch.
 - g. AC frequency meter.

- h. Generator-voltage adjusting rheostat.
- 5. Controls and Protective Devices: Controls, shutdown devices, and common visual alarm indication as required by NFPA 110 for Level 1 system, including the following:
 - a. Cranking control equipment.
 - b. Run-Off-Auto switch.
 - c. Control switch not in automatic position alarm.
 - d. Overcrank alarm.
 - e. Overcrank shutdown device.
 - f. Low water temperature alarm.
 - g. High engine temperature pre-alarm.
 - h. High engine temperature.
 - i. High engine temperature shutdown device.
 - j. Overspeed alarm.
 - k. Overspeed shutdown device.
 - l. Coolant low-level alarm.
 - m. Coolant low-level shutdown device.
 - n. Coolant high-temperature prealarm.
 - o. Coolant high-temperature alarm.
 - p. Coolant low-temperature alarm.
 - q. Coolant high-temperature shutdown device.
 - r. EPS load indicator.
 - s. Battery high-voltage alarm.
 - t. Low-cranking voltage alarm.
 - u. Battery-charger malfunction alarm.
 - v. Battery low-voltage alarm.
 - w. Lamp test.
 - x. Contacts for local and remote common alarm.
 - y. Remote manual-stop shutdown device.
 - z. Air shutdown damper alarm when used.
 - aa. Air shutdown damper shutdown device when used.
 - bb. Generator overcurrent-protective-device not-closed alarm.
- H. Connection to Datalink:
 - a. A separate terminal block, factory wired to Form C dry contacts, for each alarm and status indication.
 - b. Provide connections for datalink transmission of indications to remote data terminals via ModBus or Ethernet.
- I. Common Remote Panel with Common Audible Alarm: Comply with NFPA 110 requirements for Level 1 systems. Include necessary contacts and terminals in control and monitoring panel. Remote panel shall be powered from the engine generator battery.
- J. Remote Alarm Annunciator: Comply with NFPA 99. An LED indicator light 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.
 - 1. Overcrank alarm.
 - 2. Coolant low-temperature alarm.
 - 3. High engine temperature pre-alarm.

4. High engine temperature alarm.
 5. Low lube oil pressure alarm.
 6. Overspeed alarm.
 7. Low-fuel main tank alarm.
 8. Low coolant level alarm.
 9. Low-cranking voltage alarm.
 10. Contacts for local and remote common alarm.
 11. Audible-alarm silencing switch.
 12. Air shutdown damper when used.
 13. Run-Off-Auto switch.
 14. Control switch not in automatic position alarm.
 15. Lamp test.
 16. Low-cranking voltage alarm.
 17. Generator overcurrent-protective-device not-closed alarm.
- K. 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.
- L. Remote Emergency-Stop Switch: Flush; wall mounted unless otherwise indicated; and labeled. Push button shall be protected from accidental operation.

2.7 GENERATOR OVERCURRENT AND FAULT PROTECTION

- A. Overcurrent protective devices for the entire EPSS shall be coordinated to optimize selective tripping when a short circuit occurs. Coordination of protective devices shall consider both utility and EPSS as the voltage source.
1. Overcurrent protective devices for the EPSS shall be accessible only to authorized personnel.
- B. Generator Circuit Breakers: Molded-case, electronic-trip type; 100 percent rated; complying with UL 489.
1. Tripping Characteristics: Adjustable long-time and short-time delay and instantaneous.
 2. Trip Settings: Selected to coordinate with generator thermal damage curve.
 3. Shunt Trip: Connected to trip breaker when engine generator is shut down by other protective devices.
 4. Mounting: Adjacent to or integrated with control and monitoring panel.
- C. Ground-Fault Indication: Comply with NFPA 70 Article 700, "Emergency System" signals for ground fault.
1. Indicate ground fault with other engine generator alarm indications.
 2. Trip generator protective device on ground fault.

2.8 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 H or Class F.

- D. Stator-Winding Leads: Brought out to terminal box to permit future reconnection for other voltages if required. Provide 12-lead alternator.
- E. Range: Provide broad range of output voltage by adjusting the excitation level.
- F. Construction shall prevent mechanical, electrical, and thermal damage due to vibration, overspeed up to 125 percent of rating, and heat during operation at 110 percent of rated capacity.
- G. Enclosure: Dripproof.
- H. Instrument Transformers: Mounted within generator enclosure.
- I. Voltage Regulator: Solid-state type, separate from exciter, providing performance as specified and as required by NFPA 110.
 - 1. Adjusting Rheostat on Control and Monitoring Panel: Provide plus or minus 5 percent adjustment of output-voltage operating band.
 - 2. Maintain voltage within 30 percent on one step, full load.
 - 3. Provide anti-hunt provision to stabilize voltage.
 - 4. Maintain frequency within 5 percent and stabilize at rated frequency within two seconds.
- J. Strip Heater: Thermostatically controlled unit arranged to maintain stator windings above dew point.
- K. Windings: Two-thirds pitch stator winding and fully linked amortisseur winding.
- L. Subtransient Reactance: 12 percent, maximum.

2.9 OUTDOOR ENGINE GENERATOR ENCLOSURE

- A. Description: Vandal-resistant, sound-attenuating, weatherproof steel housing, wind resistant up to 100 mph. 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.
 - 1. Sound Attenuation Level: Level III (60-70 d(B)A @ 23'.
- B. Fire Protection: Provide fire protection according to Provide smoke detector in enclosure; mounted according to NFPA 72.
- C. Hinged Doors: With padlocking provisions.
- D. 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 components.
- E. Muffler Location: External to enclosure.
- F. Engine-Cooling Airflow through Enclosure: Maintain temperature rise of system components within required limits when unit operates at 110 percent of rated load for two hours with ambient temperature at top of range specified in system service conditions.
 - 1. Louvers: Fixed-engine, cooling-air inlet and discharge. Stormproof 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.
 - 3. Ventilation: Provide temperature-controlled exhaust fan interlocked to prevent operation when engine is running.

2.10 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.

- 1. Material: Natural rubber separated by steel shims.
 - 2. Shore A Scale Durometer Rating: Per Manufacturer recommendation.

2.11 FINISHES

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

2.12 SOURCE QUALITY CONTROL

- A. Prototype Testing: Factory test engine generator using same engine model, constructed of identical or equivalent components and equipped with identical or equivalent accessories.
 - 1. Tests: Comply with NFPA 110, Level 1 Energy Converters and with IEEE 115.

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 for piping systems and electrical connections to verify actual locations of connections before packaged engine generator installation.
- C. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

3.3 INSTALLATION

- A. Comply with NECA 1 and NECA 404.
- B. Comply with packaged engine generator manufacturers' written installation and alignment instructions and with NFPA 110.
- C. Equipment Mounting:
 - 1. Install packaged engine generators on cast-in-place concrete equipment bases. Comply with requirements for equipment bases and foundations specified in Section 033000 "Cast-in-Place Concrete."
 - 2. Install packaged engine generator with elastomeric isolator pads having a minimum deflection of 1 inch on 4-inch-high concrete base. Secure enclosure to anchor bolts installed in concrete bases.
- D. Install engine generator to provide access, without removing connections or accessories, for periodic maintenance.
- E. Exhaust System: 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.

- F. Drain Piping: Install condensate drain piping to muffler drain outlet with a shutoff valve, stainless-steel flexible connector, and Schedule 40 black steel pipe with welded joints.
- G. Electrical Wiring: Install electrical devices furnished by equipment manufacturers but not specified to be factory mounted.

3.4 CONNECTIONS

- A. Piping installation requirements are specified in other 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. Gaseous Fuel Connections:
 - 1. Connect fuel piping to engines with a gate valve and union and flexible connector.
 - 2. Install manual shutoff valve in a remote location to isolate gaseous fuel supply to the generator.
 - 3. Vent gas pressure regulators outside building a minimum of 60 inches from building openings.
- E. Ground equipment according to Section 260526 "Grounding and Bonding for Electrical Systems."

3.5 IDENTIFICATION

- A. Identify system components according to Section 230553 "Identification for HVAC Piping and Equipment" and Section 260553 "Identification for Electrical Systems."

3.6 FIELD QUALITY CONTROL

- A. Manufacturer's Field Service: Engage a factory-authorized service representative to test and inspect components, assemblies, and equipment installations, including connections.
- B. Tests and Inspections:
 - 1. Perform tests recommended by manufacturer and each visual and mechanical inspection and electrical and mechanical test listed in first two subparagraphs below, as specified in NETA ATS. Certify compliance with test parameters.
 - a. Visual and Mechanical Inspection:
 - 1) Compare equipment nameplate data with Drawings and the Specifications.
 - 2) Inspect physical and mechanical condition.
 - 3) Inspect anchorage, alignment, and grounding.
 - 4) Verify that the unit is clean.
 - b. Electrical and Mechanical Tests:
 - 1) Perform insulation-resistance tests according to IEEE 43.
 - c. Machines 200 hp or Less: Test duration shall be one minute. Calculate the dielectric-absorption ratio.

- 1) Test protective relay devices.
 - 2) Verify phase rotation, phasing, and synchronized operation as required by the application.
 - 3) Functionally test engine shutdown for low oil pressure, overtemperature, overspeed, and other protection features as applicable.
 - 4) Perform vibration test for each main bearing cap.
 - 5) Conduct performance test according to NFPA 110.
 - 6) Verify correct functioning of the governor and regulator.
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. 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 at 25 and 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 engine generator installation, including engine exhaust and cooling-air intake and discharge, at four locations 25 feet from edge of the generator enclosure on the property line, and compare measured levels with required values.
- C. Coordinate tests with tests for transfer switches and run them concurrently.

- D. Test instruments shall have been calibrated within the past 12 months, traceable to NIST Calibration Services, and adequate for making positive observation of test results. Make calibration records available for examination on request.
- E. Leak Test: After installation, charge exhaust, coolant, and fuel systems and test for leaks. Repair leaks and retest until no leaks exist.
- F. Operational Test: After electrical circuitry has been energized, start units to confirm proper motor rotation and unit operation for generator and associated equipment.
- G. Test and adjust controls and safeties. Replace damaged and malfunctioning controls and equipment.
- H. Remove and replace malfunctioning units and retest as specified above.
- I. Retest: Correct deficiencies identified by tests and observations, and retest until specified requirements are met.
- J. 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.
- K. 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 while running with maximum load. 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.

3.7 MAINTENANCE SERVICE

- A. Initial Maintenance Service: Beginning at Substantial Completion, maintenance service shall include 12 months' full maintenance by skilled employees of manufacturer's authorized service representative. Include quarterly preventive maintenance and exercising to check for proper starting, load transfer, and running under load. Include routine preventive maintenance as recommended by manufacturer and adjusting as required for proper operation. Parts shall be manufacturer's authorized replacement parts and supplies.

3.8 DEMONSTRATION

- A. Engage a factory-authorized service representative to train Owner's maintenance personnel to adjust, operate, and maintain packaged engine generators.

END OF SECTION 263213.16

SECTION 263600 – TRANSFER SWITCHES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. Section includes automatic transfer switches rated 600 V and less.

1.3 ACTION SUBMITTALS

- A. Product Data: For each type of product.
 - 1. Include construction details, material descriptions, dimensions of individual components and profiles, and finishes for transfer switches.
 - 2. Include rated capacities, operating characteristics, electrical characteristics, and accessories.
- B. Shop Drawings:
 - 1. Include plans, elevations, sections, details showing minimum clearances, conductor entry provisions, gutter space, and installed features and devices.
 - 2. Include material lists for each switch specified.
 - 3. Single-Line Diagram: Show connections between transfer switch, bypass/isolation switches, power sources, and load; and show interlocking provisions for each combined transfer switch and bypass/isolation switch.

1.4 WARRANTY

- A. Manufacturer's Warranty: Manufacturer agrees to repair or replace components of transfer switch or transfer switch components that fail in materials or workmanship within specified warranty period.
 - 1. Warranty Period: five years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

- A. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.
- B. Comply with NEMA ICS 1.
- C. Comply with NFPA 99.
- D. Comply with NFPA 110.
- E. Comply with UL 1008 unless requirements of these Specifications are stricter.
- F. Indicated Current Ratings: Apply as defined in UL 1008 for continuous loading and total system transfer, including tungsten filament lamp loads not exceeding 30 percent of switch ampere rating, unless otherwise indicated.
- G. Tested Fault-Current Closing and Short-Circuit Ratings: Adequate for duty imposed by protective devices at installation locations in Project under the fault conditions indicated, based on testing according to UL 1008.
 - 1. Short-time withstand capability for 30 cycles.
- H. Repetitive Accuracy of Solid-State Controls: All settings shall be plus or minus 2 percent or better over an operating temperature range of minus 20 to plus 70 deg C.
- I. Resistance to Damage by Voltage Transients: Components shall meet or exceed voltage-surge withstand capability requirements when tested according to IEEE C62.62. Components shall meet or exceed voltage-impulse withstand test of NEMA ICS 1.
- J. Electrical Operation: Accomplish by a nonfused, momentarily energized solenoid or electric-motor-operated mechanism. Switches for emergency or standby purposes shall be mechanically and electrically interlocked in both directions to prevent simultaneous connection to both power sources unless closed transition.

2.2 MOLDED-CASE-TYPE AUTOMATIC TRANSFER SWITCHES

- A. Comply with Level 1 equipment according to NFPA 110.
- B. Switch Characteristics: Designed for continuous-duty repetitive transfer of full-rated current between active power sources.
 - 1. Limitation: Switches using contactor-based components are unacceptable.
 - 2. Switch Action: Double throw; mechanically held in both directions.
 - 3. Contacts: Silver composition or silver alloy for load-current switching.
 - 4. Conductor Connectors: Suitable for use with conductor material and sizes.
 - 5. Material: Hard-drawn copper, 98 percent conductivity.
 - 6. Main and Neutral Lugs: Mechanical type.

7. Ground Lugs and Bus-Configured Terminators: Mechanical type.
 8. Connectors shall be marked for conductor size and type according to UL 1008.
- C. Automatic Open-Transition Transfer Switches: Interlocked to prevent the load from being closed on both sources at the same time.
1. Sources shall be mechanically and electrically interlocked to prevent closing both sources
 2. Fully automatic break-before-make operation with center off position.
 3. Fully automatic break-before-make operation with transfer when two sources have near
Retain one of first three paragraphs below to include nonautomatic switching operation.
First paragraph includes optional features with some manufacturers.
- D. Manual Switch Operation: Under load, with door closed and with either or both sources energized. Transfer time is same as for electrical operation. Control circuit automatically disconnects from electrical operator during manual operation.
- E. Manual Switch Operation: Unloaded. Control circuit automatically disconnects from electrical operator during manual operation.
- F. Electric Non-automatic Switch Operation: Electrically actuated by push buttons designated "Normal Source" and "Alternative Source." Switch shall be capable of transferring load in either direction with either or both sources energized.
- G. Transfer Switches Based on Molded-Case-Switch Components: Comply with UL 489 and UL 869A.
- H. Automatic Transfer-Switch Controller Features:
1. Controller operates through a period of loss of control power.
 2. Undervoltage Sensing for Each Phase of Normal and Alternative Source: Sense low phase-to-ground voltage on each phase. Pickup voltage shall be adjustable from 85 to 100 percent of nominal, and dropout voltage shall be adjustable from 75 to 98 percent of pickup value. Factory set for pickup at 90 percent and dropout at 85 percent.
 3. Voltage/Frequency Lockout Relay: Prevent premature transfer to generator. Pickup voltage shall be adjustable from 85 to 100 percent of nominal. Factory set for pickup at 90 percent. Pickup frequency shall be adjustable from 90 to 100 percent of nominal. Factory set for pickup at 95 percent.
 4. Time Delay for Retransfer to Normal Source: Adjustable from zero to 30 minutes, and factory set for 10 minutes. Override shall automatically defeat delay on loss of voltage or sustained undervoltage of emergency source, provided normal supply has been restored.
 5. Test Switch: Simulate normal-source failure.
 6. Switch-Position Pilot Lights: Indicate source to which load is connected.
 7. Source-Available Indicating Lights: Supervise sources via transfer-switch normal- and emergency-source sensing circuits.
 - a. Normal Power Supervision: Green light with nameplate engraved "Normal Source Available."
 - b. Emergency Power Supervision: Red light with nameplate engraved "Emergency Source Available."

8. Unassigned Auxiliary Contacts: Two normally open, single-pole, double-throw contacts for each switch position, rated 10 A at 240-V ac.
9. Transfer Override Switch: Overrides automatic retransfer control so automatic transfer switch will remain connected to emergency power source regardless of condition of normal source. Pilot light indicates override status.

2.3 TRANSFER SWITCH ACCESSORIES

A. Remote Annunciator System:

1. Source Limitations: Same manufacturer as transfer switch in which installed.
2. Functional Description: Remote annunciator panel shall annunciate conditions for indicated transfer switches.
3. Annunciation panel display shall include the following indicators:
 - a. Sources available, as defined by actual pickup and dropout settings of transfer-switch controls.
 - b. Switch position.
 - c. Switch in test mode.
 - d. Failure of communication link.
4. Annunciator Panel: LED-lamp type with audible signal and silencing switch.
 - a. Indicating Lights: Grouped for each transfer switch monitored.
 - b. Label each group, indicating transfer switch it monitors, location of switch, and identity of load it serves.
 - c. Mounting: Flush, modular, steel cabinet unless otherwise indicated.
 - d. Lamp Test: Push-to-test or lamp-test switch on front panel.

2.4 SOURCE QUALITY CONTROL

- A. Factory Tests: Test and inspect components, assembled switches, and associated equipment according to UL 1008. Ensure proper operation. Check transfer time and voltage, frequency, and time-delay settings for compliance with specified requirements. Perform dielectric strength test complying with NEMA ICS 1.
- B. Prepare test and inspection reports.
 1. For each of the tests required by UL 1008, performed on representative devices, for emergency required systems. Include results of test for the following conditions:
 - a. Overvoltage.
 - b. Undervoltage.
 - c. Loss of supply voltage.
 - d. Reduction of supply voltage.
 - e. Alternative supply voltage or frequency is at minimum acceptable values.
 - f. Temperature rise.
 - g. Dielectric voltage-withstand; before and after short-circuit test.
 - h. Overload.

- i. Contact opening.
- j. Endurance.
- k. Short circuit.
- l. Short-time current capability.
- m. Receptacle withstand capability.
- n. Insulating base and supports damage.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Floor-Mounting Switch: Anchor to floor by bolting.
 - 1. Install transfer switches on cast-in-place concrete equipment base(s). Comply with requirements for equipment bases and foundations specified in Section 033000 "Cast-in-Place Concrete."
 - 2. Coordinate size and location of concrete bases. Cast anchor-bolt inserts into bases.
 - 3. Provide workspace and clearances required by NFPA 70.
- B. Identify components according to Section 260553 "Identification for Electrical Systems."
- C. Set field-adjustable intervals and delays, relays, and engine exerciser clock.
- D. Comply with NECA 1.

3.2 CONNECTIONS

- A. Wiring within Enclosures: Bundle, lace, and train conductors to terminal points with no excess and without exceeding manufacturer's limitations on bending radii.
- B. Ground equipment according to Section 260526 "Grounding and Bonding for Electrical Systems."
- C. Final connections to equipment shall be made with liquidtight, flexible metallic conduit no more than 18 inches in length.

3.3 FIELD QUALITY CONTROL

- A. Testing Agency: Engage a qualified testing agency to perform tests and inspections.
- B. Manufacturer's Field Service: Engage a factory-authorized service representative to test and inspect components, assemblies, and equipment installations, including connections.
- C. Perform the following tests and inspections with the assistance of a factory-authorized service representative:
 - 1. After installing equipment, test for compliance with requirements according to NETA ATS.

2. Visual and Mechanical Inspection:

- a. Compare equipment nameplate data with Drawings and Specifications.
- b. Inspect physical and mechanical condition.
- c. Inspect anchorage, alignment, grounding, and required clearances.
- d. Verify that the unit is clean.
- e. Verify appropriate lubrication on moving current-carrying parts and on moving and sliding surfaces.
- f. Verify that manual transfer warnings are attached and visible.
- g. Verify tightness of all control connections.
- h. Inspect bolted electrical connections for high resistance using one of the following methods, or both:
 - 1) Use of low-resistance ohmmeter.
 - 2) Verify tightness of accessible bolted electrical connections by calibrated torque-wrench method according to manufacturer's published data.
- i. Perform manual transfer operation.
- j. Verify positive mechanical interlocking between normal and alternate sources.
- k. Perform visual and mechanical inspection of surge arresters.
- l. Inspect control power transformers.
 - 1) Inspect for physical damage, cracked insulation, broken leads, tightness of connections, defective wiring, and overall general condition.
 - 2) Verify that primary and secondary fuse or circuit-breaker ratings match Drawings.
 - 3) Verify correct functioning of drawout disconnecting contacts, grounding contacts, and interlocks.

3. Electrical Tests:

- a. Perform insulation-resistance tests on all control wiring with respect to ground.
- b. Perform a contact/pole-resistance test. Compare measured values with manufacturer's acceptable values.
- c. Verify settings and operation of control devices.
- d. Calibrate and set all relays and timers.
- e. Verify phase rotation, phasing, and synchronized operation.
- f. Perform automatic transfer tests.
- g. Verify correct operation and timing of the following functions:
 - 1) Normal source voltage-sensing and frequency-sensing relays.
 - 2) Engine start sequence.
 - 3) Time delay on transfer.
 - 4) Alternative source voltage-sensing and frequency-sensing relays.
 - 5) Automatic transfer operation.
 - 6) Interlocks and limit switch function.
 - 7) Time delay and retransfer on normal power restoration.
 - 8) Engine cool-down and shutdown feature.

4. Measure insulation resistance phase-to-phase and phase-to-ground with insulation-resistance tester. Include external annunciation and control circuits. Use test voltages and

procedure recommended by manufacturer. Comply with manufacturer's specified minimum resistance.

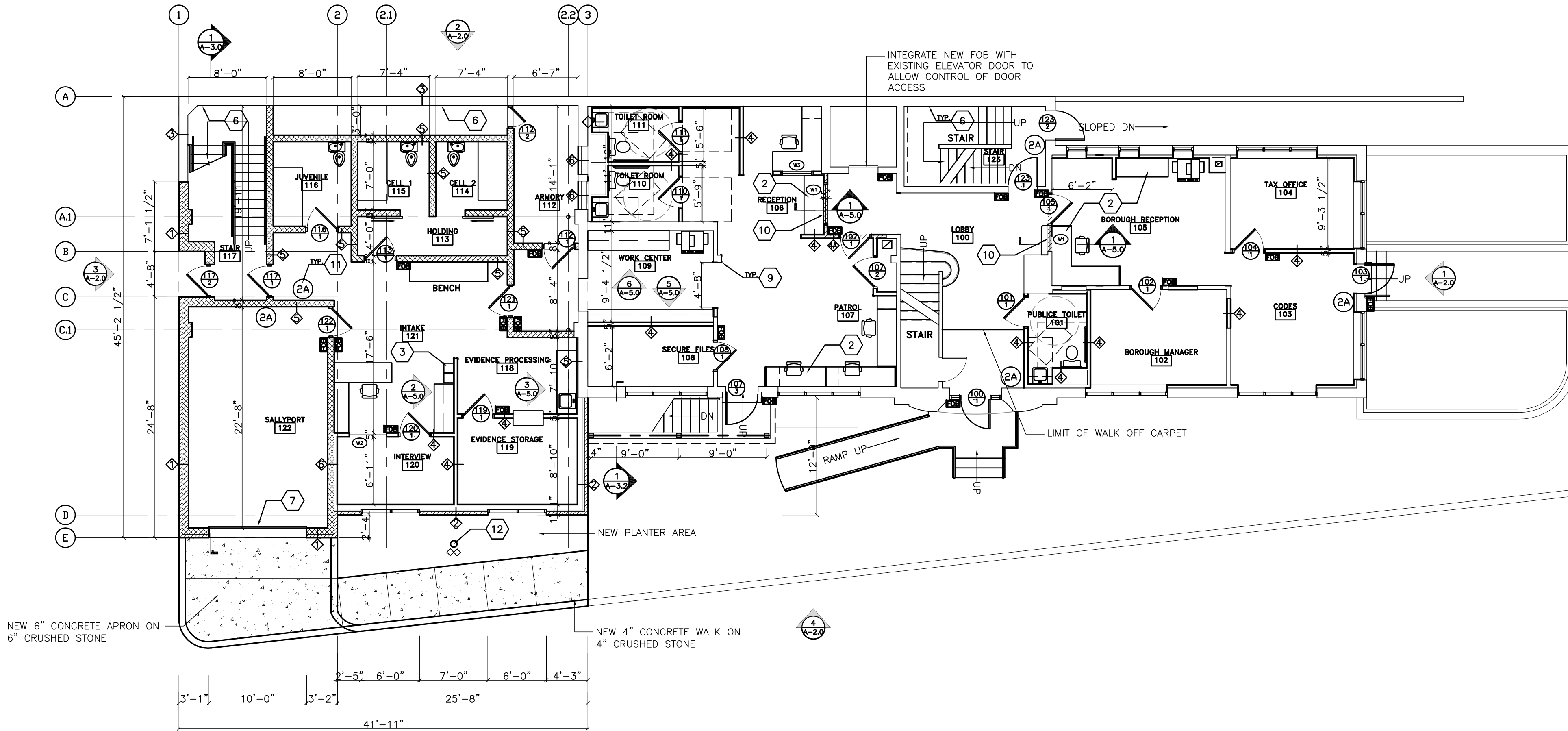
- a. Check for electrical continuity of circuits and for short circuits.
 - b. Inspect for physical damage, proper installation and connection, and integrity of barriers, covers, and safety features.
 - c. Verify that manual transfer warnings are properly placed.
 - d. Perform manual transfer operation.
5. After energizing circuits, perform each electrical test for transfer switches stated in NETA ATS and demonstrate interlocking sequence and operational function for each switch at least three times.
- a. Simulate power failures of normal source to automatic transfer switches and retransfer from emergency source with normal source available.
 - b. Simulate loss of phase-to-ground voltage for each phase of normal source.
 - c. Verify time-delay settings.
 - d. Verify pickup and dropout voltages by data readout or inspection of control settings.
 - e. Test bypass/isolation unit functional modes and related automatic transfer-switch operations.
 - f. Perform contact-resistance test across main contacts and correct values exceeding 500 microhms and values for one pole deviating by more than 50 percent from other poles.
 - g. Verify proper sequence and correct timing of automatic engine starting, transfer time delay, retransfer time delay on restoration of normal power, and engine cool-down and shutdown.
6. Ground-Fault Tests: Coordinate with testing of ground-fault protective devices for power delivery from both sources.
- a. Verify grounding connections and locations and ratings of sensors.
- D. Coordinate tests with tests of generator and run them concurrently.
- E. Report results of tests and inspections in writing. Record adjustable relay settings and measured insulation and contact resistances and time delays. Attach a label or tag to each tested component indicating satisfactory completion of tests.
- F. Transfer switches will be considered defective if they do not pass tests and inspections.
- G. Remove and replace malfunctioning units and retest as specified above.
- H. Prepare test and inspection reports.
- I. Infrared Scanning: After Substantial Completion, but not more than 60 days after Final Acceptance, perform an infrared scan of each switch. Remove all access panels so joints and connections are accessible to portable scanner.
1. Instrument: Use an infrared scanning device designed to measure temperature or to detect significant deviations from normal values. Provide calibration record for device.

2. Record of Infrared Scanning: Prepare a certified report that identifies switches checked and that describes scanning results. Include notation of deficiencies detected, remedial action taken, and observations after remedial action.
3. Follow-up Infrared Scanning: Perform an additional follow-up infrared scan of each switch 11 months after date of Substantial Completion.

3.4 DEMONSTRATION

- A. Engage a factory-authorized service representative to train Owner's maintenance personnel to adjust, operate, and maintain transfer switches and related equipment.
- B. Training shall include testing ground-fault protective devices and instructions to determine when the ground-fault system shall be retested. Include instructions on where ground-fault sensors are located and how to avoid negating the ground-fault protection scheme during testing and circuit modifications.
- C. Coordinate this training with that for generator equipment.

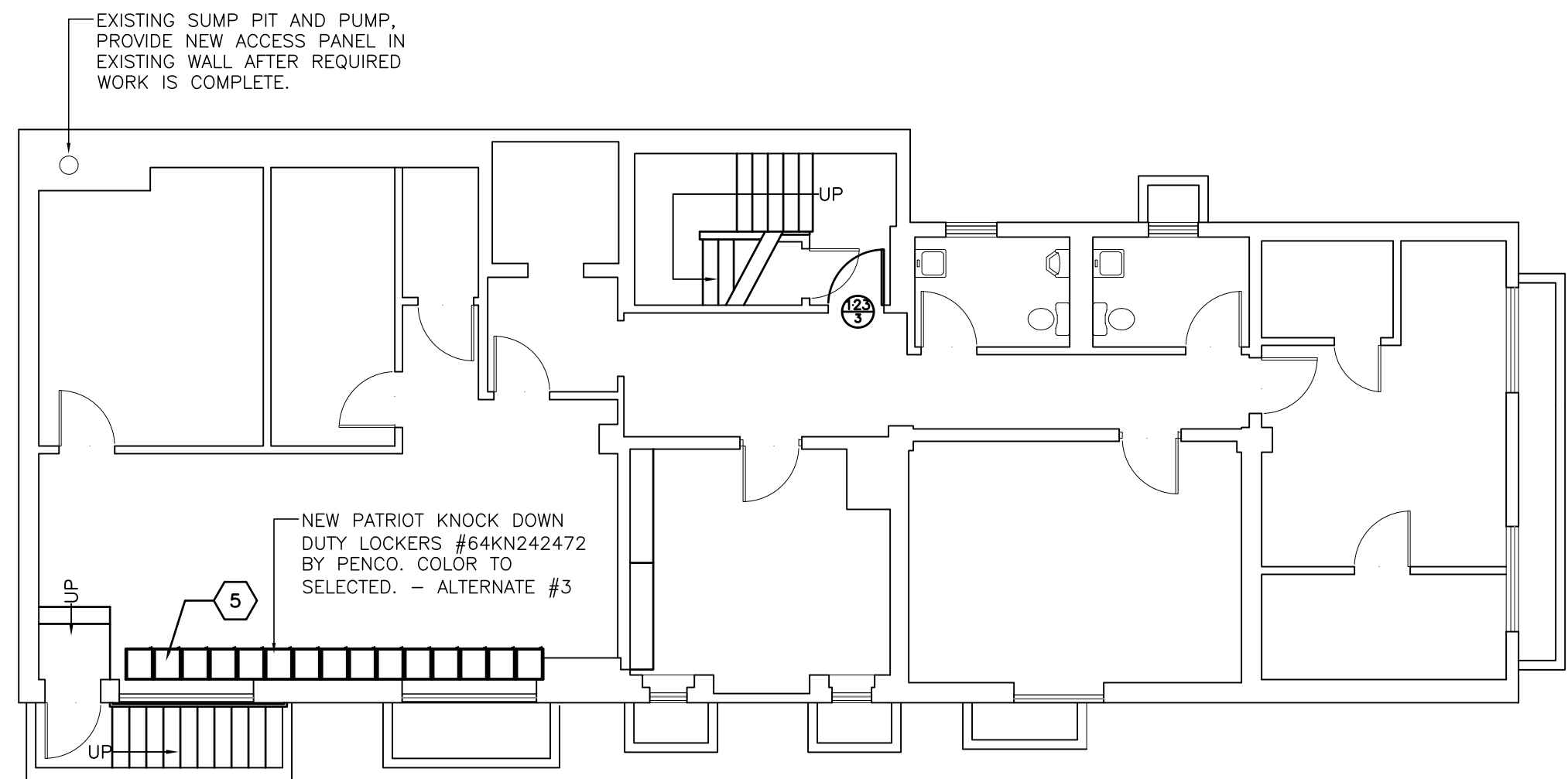
END OF SECTION 263600



1 PROPOSED FIRST FLOOR PLAN

A-1

SCALE: 1/8"=1'-0"



2 PROPOSED BASEMENT PLAN

A-1

SCALE: 1/8"=1'-0"

WALL TYPE LEGEND

- EXISTING WALL TO REMAIN FRAME OR MASONRY
- NEW EXTERIOR WALL - U935 1 HR - 8" CMU WALL w/ 1 1/2" RIGID INSULATION, CARLISLE CCW 705 AIR BARRIER, 1" AIR SPACE & 4" BRICK VENEER @ EXTERIOR, PTD. CMU @ INTERIOR
- NEW EXTERIOR WALL - 6" MTL. STUDS @ 16" O.C. w/ 5 1/2" KRAFT FACED BATT INSULATION, 1/2" DENS GLAS SHEATHING, CARLISLE CCW 705 AIR BARRIER, 2" AIR SPACE & 4" BRICK VENEER @ EXTERIOR, 3/8" GYP. BD. @ INTERIOR
- NEW (2) HOUR EXTERIOR WALL - 6" MTL. STUDS @ 16" O.C. w/ 5 1/2" FACED BATT INSULATION, 1/2" FIREGUARD DENS GLASS SHEATHING, CARLISLE CCW 705 AIR BARRIER, 3/8" METAL HAT CHANNEL @ 24" O.C. HORIZONTAL, 2" METL SPAN CF42 INSULATED PANEL @ EXTERIOR, 3/8" FIRE CODE "X" GYP. BD. @ BOTH SIDES
- NEW INTERIOR WALL - 3 5/8" MTL. STUDS @ 16" O.C. w/ 3 1/2" UNFACED BATT INSULATION, & 3/8" GYP. BD. @ BOTH SIDES. RUN WALL TO 6" ABOVE SCHEDULED CEILING, RUN WALL FULL HEIGHT IF NO CEILING IS SCHEDULED PROVIDE DUROCK @ TILE LOCATIONS& MOISTURE RESISTANT DRYWALL IN TOILET ROOMS
- NEW INTERIOR WALL - 3 5/8" MTL. STUDS @ 16" O.C. w/ 3 1/2" UNFACED BATT INSULATION, 1/2" BULLET RESISTANT FIBERGLASS ARMOUR (LEVEL 3)& 3/8" ABUSE RESISTANT GYP. BD. @ BOTH SIDES. RUN WALL FULL HEIGHT, TIGHT TO BOTTOM OF DECK ABOVE
- NEW INTERIOR WALL - 8" CMU WALL PTD. BOTH SIDES
- NEW INTERIOR WALL - 8" CMU WALL PTD. 3 5/8" MTL. STUDS @ 16" O.C. w/ 3 1/2" UNFACED BATT INSULATION, & 3/8" DRYWALL.
- NEW INTERIOR WALL - 8" CMU WALL w/ 3/8" HAT CHANNEL @ 16" O.C. 3/8" GYP. BD. ON ONE FACE, PTD. CMU ON THE OPPOSITE FACE.

KEY NOTES:

- 1 PROVIDE 4x8x8" F.R.T. PLYWOOD, BEHIND GYPSUM BOARD FOR MOUNTING OF EQUIPMENT.
- 2 NEW PLASTIC LAMINATE CASEWORK WITH PLASTIC LAMINATE COUNTERTOPS
- 3 PRISONER LOCKERS - VANGUARD 3 TIER LOCKER 12X12 #6419R
- 4 ROOF HATCH AND ACCESS LADDER MODEL S20 AS MANUFACTURED BY BILCO - PROVIDE BLOCKING IN WALLS FOR LADDER ATTACHMENT
- 5 PATRIOT KNOCK DOWN DUTY LOCKERS #64KN242472 BY PENCO. COLOR TO BE SELECTED
- 6 PAINT EXISTING MASONRY.
- 7 OVERHEAD GARAGE DOOR MODEL THERMACORE MODEL # 596 DOOR SIZE 10'X9' AS MANUFACTURED BY OVERHEAD DOOR COMPANY OR APPROVED EQUAL. PROVIDE ALUM. SASH SECTION COLOR TO BE GRAY & RMX MEDIUM DUTY OPERATOR AND ALL ASSOCIATED HARDWARE FOR A COMPLETE INSTALLATION.
- 8 4" CONCRETE WALK ON 4" CRUSHED STONE W/ W1.4 X W1.4 6X6 WWF. PROVIDE CONTROL JOINTS @ 5'-0" O/C. & EXPANSION JOINT @ 20'-0" O.C.
- 9 NEW VINYL CORNER GUARDS- MODEL SGU AS MANUFACTURED BY JC- INDUSTRIES, 48" LENGTH WITH 2" WINGS
- 10 SECURITY WINDOW AS MANUFACTURED BY NORTH AMERICAN BULLETPROOF - PROVIDE LEVEL 3 SECURITY
- 11 2A FIRE EXTINGUISHER MTD. 48" TO TOP.
- 12 NEW FLAG POLES WITH LED UPLIGHTING, GC TO RUN CONDUIT AND CIRCUITING FOR NEW LIGHTING.

LINN ARCHITECTS

140 N. PROVIDENCE ROAD
MEDIA, PENNSYLVANIA 19063
TEL: 610-566-7044
FAX: 610-566-3258

PROPOSED BASEMENT & FIRST FLOOR PLAN

RENOVATIONS TO MUNICIPAL BUILDING

BOROUGH OF EDDYSTONE

1300 E. 12TH ST.

EDDYSTONE, PA 19022

REVISIONS

DATE

SHEET NO.

NO.

DESCRIPTION

DATE

ISSUED FOR BID

DRAWN BY

CHECKED BY

PROJ. NO.

22100

A-1.0

SHEET OF

<p>Diagram A: Solid door, 3'-0" wide, 7'-0" high.</p> <p>Diagram B: Door with transom, 3'-0" wide, 7'-0" high, transom 1'-0" high, 3'-0" wide.</p> <p>Diagram C: Door with transom, 3'-0" wide, 7'-0" high, transom 1'-0" high, 3'-0" wide.</p> <p>Diagram D: Door with transom, 3'-0" wide, 7'-0" high, transom 1'-0" high, 3'-0" wide.</p>	<p>DOOR NOTES:</p> <ol style="list-style-type: none"> 1) ALL DOORS TO BE PROVIDED WITH LEVER HANDLES 2) ALL HOLLOW METAL DOORS TO BE 18 GAUGE. ALL EXTERIOR HOLLOW METAL FRAMES TO BE 16 GAUGE. ALL HOLLOW METAL FRAMES SHALL BE PROVIDED WITH REINFORCING AT THE HINGE, JAMB, STRIKE, AND CLOSER LOCATIONS. HOLLOW METAL FRAMES IN GYP. BD. OPENINGS SHALL BE KNOCKDOWN FRAMES. 3) ALL HOLLOW METAL DOORS AND FRAMES SHALL BE PAINTED – SEE FINISH SCHEDULE. ALL WOOD DOORS TO BE STAIN GRADE. 4) ALL DOORS SHALL RECEIVE SILENCER PADS AT HM FRAME. PROVIDE ROCKWOOD #608 OR #609 5) ALL EXTERIOR HM DOORS AND FRAMES SHALL RECEIVE FACTORY APPLIED A60 GALVANIZED FINISH. PROVIDE FIELD APPLIED GALVANIZED FINISH AS A RESULT OF FIELD PREPARATION AND/OR HARDWARE INSTALLATION. 6) ALL RATED DOORS TO HAVE UL LABELS 7) THRESHOLDS, WEATHERSTRIPPING & SWEEPS TO BE INSTALLED PER MANF. INSTRUCTIONS 8) DOOR TYPE "D" – THERMALLY BROKEN, 1" INSULATING TEMPERED GLASS, WITH 10" BOTTOM RAIL. PROVIDE DOR-O-MATIC 1390 MID RAIL PANIC, INTERNATIONAL RM LOCK CYLINDER, & LCN 4041 SUPER SMOOTHIE SURFACE MOUNTED CLOSER
<p>DOOR TYPES</p>	

4'-0"

HOLLOW METAL FRAME, CLEAR ANODIZED

STAINLESS STL. TALK THRU

1/4" TEMPERED GLASS SLIDING WINDOW w/ LOCKSET AND PULL

PLASTIC LAMINATED COUNTER TRANSACTION AREA

W1

3'-5"

3'-2"

7'-2"

2"

4'-0"

2"

3'-5"

3'-2"

7'-2"

PROVIDE ONE WAY TEMPERED GLASS

HOLLOW METAL FRAME, PAINTED

W2

2"

3'-4"

2"

3'-5"

3'-2"

7'-2"

PROVIDE TEMPERED GLASS

HOLLOW METAL FRAME, PAINTED

W3

2"

3'-4"

2"

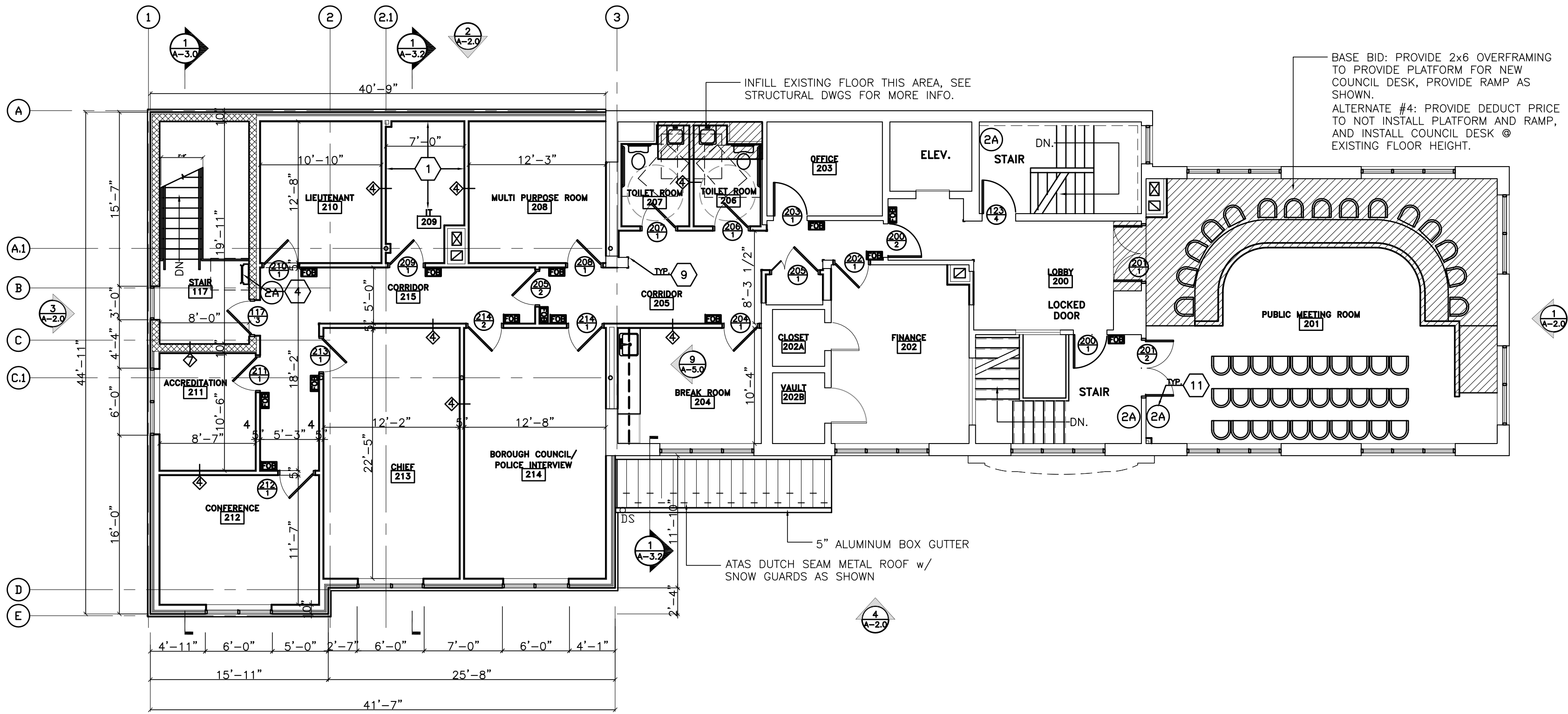
3'-5"

3'-2"

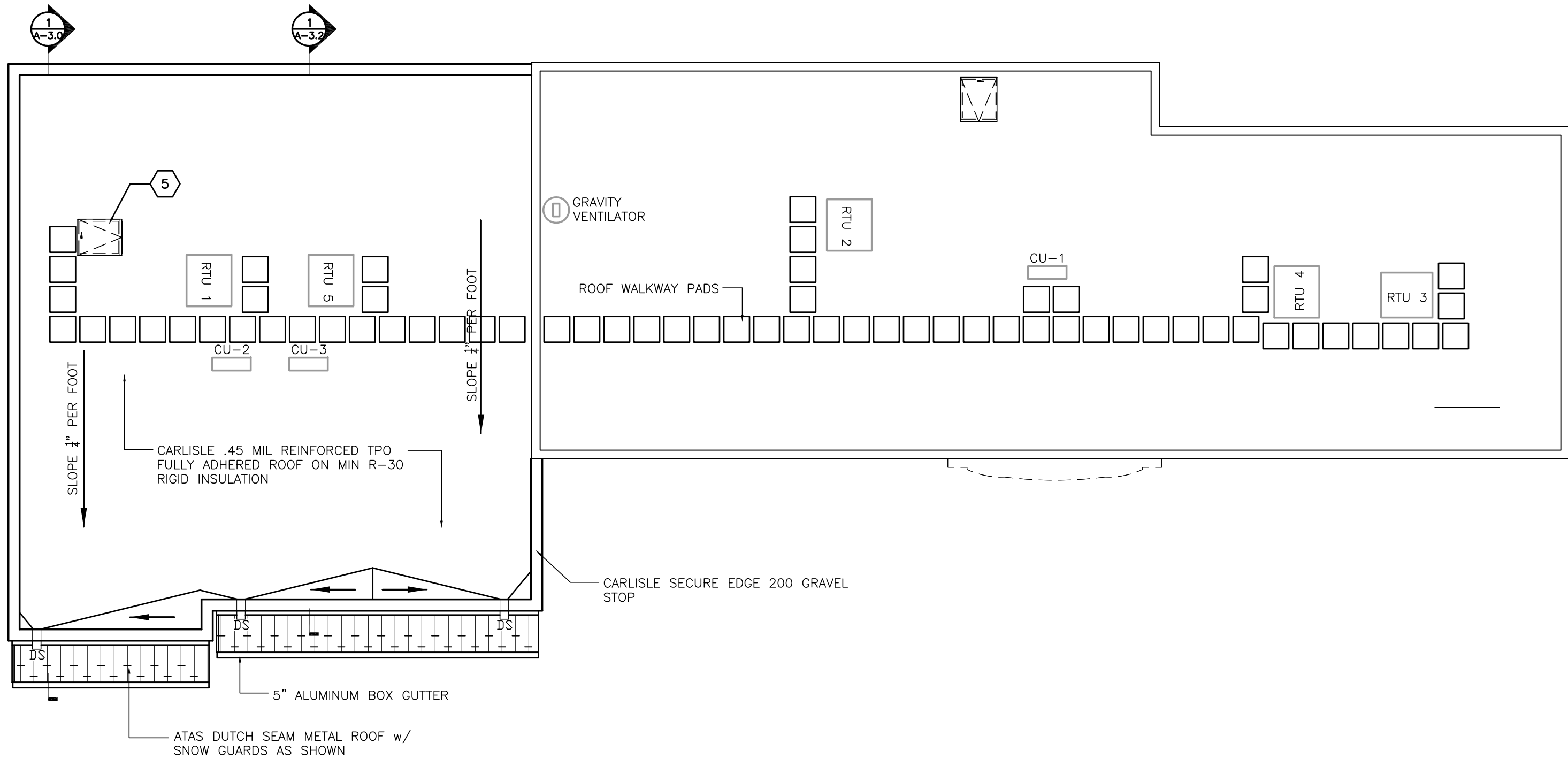
7'-2"

ITEM NUMBER	DESCRIPTION	FINISH	MANUFACTURER
1A	5BB1-NRP- 4.5"x4.5"-BALL BEARING HINGE	US26D	IVES
1B	5BB1-NRP-SEC 4.5"x4.5"-NON FERROUS BALL BEARING HINGE	US32D	IVES
2A	AL50PD-SAT-626 (OFFICE FUNCTION) w/ INTERCHANGEABLE CORE	626	SCHLAGE
2B	AL80PD-SAT-626 (STOREROOM FUNCTION) w/ INTERCHANGEABLE CORE	626	SCHLAGE
2C	AL40S-SAT-626 (RESTROOM FUNCTION)	626	SCHLAGE
2D	AL10S-SAT-626 (PASSAGE FUNCTION)	626	SCHLAGE
2E	AL170-SAT-626 (DUMMY TRIM)	626	SCHLAGE
2F	B600-626 DEADBOLT w/ THUMBTURN	626	SCHLAGE
2G	D9336 MAXI MORTISE - INMATE KEYED LOCK		FOLGER ADAM
3A	99-27-L-06 SURFACE	US26D	VON DUPRIN
3B	99-47-L-06 CONCEALED	US26D	VON DUPRIN
3C	99-47-L-BE-06 BLANK (PASSAGE)	US26D	VON DUPRIN
4A	4040 SERIES	AL	LCN
5A	8200 PUSH PLATE 4x16/8302 PULL PLATE 4x16	US32D	IVES
6A	#409 CONCAVE WALL BUMPER	626	ROCKWOOD
6B	#441CU FLOOR BUMPER	626	ROCKWOOD
7A	8"x34"x.050 - KICKPLATE	US32D	HAGER
8A	292-D - AUTO-LATCHING FLUSH BOLT SET	US26D	HAGER
8B	318-D - ROLLER LATCH	US26D	HAGER
9A	413 S SADDLE THRESHOLD	MIL	HAGER
9B	477 S BUMPER THRESHOLD w VINYL INSERT	MIL	HAGER
10A	PEMKO 3030S GASKETING PEMKO 346 DOOR TOP	MIL	PEMKO

[illegible]



1 PROPOSED SECOND FLOOR PLAN
A-1.1 SCALE: 1/8"=1'-0"



2 PROPOSED ROOF PLAN
A-1.1 SCALE: 1/8"=1'-0"

WALL TYPE LEGEND

- EXISTING WALL TO REMAIN FRAME OR MASONRY
- NEW EXTERIOR WALL - U935 1 HR - 8" CMU WALL w/ 1 1/2" RIGID INSULATION, CARLISLE COW 705 AIR BARRIER, 1" AIR SPACE & 4" BRICK VENEER @ EXTERIOR, PTD. CMU @ INTERIOR
- NEW EXTERIOR WALL - 6" MTL. STUDS @ 16" O.C. w/ 5 1/2" KRAFT FACED BATT INSULATION, 1/2" DENS GLAS SHEATHING, CARLISLE COW 705 AIR BARRIER, 2" AIR SPACE & 4" BRICK VENEER @ EXTERIOR, 3/8" GYP. BD. @ INTERIOR
- NEW (2) HOUR EXTERIOR WALL - 6" MTL. STUDS @ 16" O.C. w/ 5 1/2" FACED BATT INSULATION, 1/2" FIREGUARD DENS GLASS SHEATHING, CARLISLE COW 705 AIR BARRIER, 1/2" METAL HAT CHANNEL @ 24" O.C. HORIZONTAL, 2" MTL SPAN CF42 INSULATED PANEL @ EXTERIOR, 3/8" FIRE CODE "X" GYP. BD. @ BOTH SIDES
- NEW INTERIOR WALL - 3 5/8" MTL. STUDS @ 16" O.C. w/ 3 1/2" UNFACED BATT INSULATION, & 3/8" GYP. BD. @ BOTH SIDES. RUN WALL TO 6" ABOVE SCHEDULED CEILING, RUN WALL FULL HEIGHT IF NO CEILING IS SCHEDULED PROVIDE DUROCK @ TILE LOCATIONS& MOISTURE RESISTANT DRYWALL IN TOILET ROOMS
- NEW INTERIOR WALL - 3 5/8" MTL. STUDS @ 16" O.C. w/ 3 1/2" UNFACED BATT INSULATION, 1/2" BULLET RESISTANT FIBERGLASS ARMOUR (LEVEL 3)& 8" ABUSE RESISTANT GYP. BD. @ BOTH SIDES. RUN WALL FULL HEIGHT, TIGHT TO BOTTOM OF DECK ABOVE
- NEW INTERIOR WALL - 8" CMU WALL PTD. BOTH SIDES
- NEW INTERIOR WALL - 8" CMU WALL PTD. 3 5/8" MTL. STUDS @ 16" O.C. w/ 3 1/2" UNFACED BATT INSULATION, & 3/8" DRYWALL.
- NEW INTERIOR WALL - 8" CMU WALL w/ 1/2" HAT CHANNEL @ 16" O.C. 3/8" GYP. BD. ON ONE FACE, PTD. CMU ON THE OPPOSITE FACE.

KEY NOTES:

- 1 PROVIDE 4x8x8" F.R.T. PLYWOOD, BEHIND GYPSUM BOARD FOR MOUNTING OF EQUIPMENT.
- 2 NEW PLASTIC LAMINATE CASEWORK WITH PLASTIC LAMINATE COUNTERTOPS
- 3 PRISONER LOCKERS - VANGUARD 3 TIER LOCKER 12X12 #6419R
- 4 ROOF HATCH AND ACCESS LADDER MODEL S20 AS MANUFACTURED BY BILCO - PROVIDE BLOCKING IN WALLS FOR LADDER ATTACHMENT
- 5 PATRIOT KNOCK DOWN DUTY LOCKERS #64KN242472 BY PENCO. COLOR TO BE SELECTED
- 6 PAINT EXISTING MASONRY.
- 7 OVERHEAD GARAGE DOOR MODEL THERMACORE MODEL # 596 DOOR SIZE 10'X9' AS MANUFACTURED BY OVERHEAD DOOR COMPANY OR APPROVED EQUAL. PROVIDE ALUM. SASH SECTION COLOR TO BE GRAY & RMX MEDIUM DUTY OPERATOR AND ALL ASSOCIATED HARDWARE FOR A COMPLETE INSTALLATION.
- 8 4" CONCRETE WALK ON 4" CRUSHED STONE W/ W1.4 X W1.4 6X6 WWF. PROVIDE CONTROL JOINTS @ 5'-0" O/C. & EXPANSION JOINT @ 20'-0" O.C.
- 9 NEW VINYL CORNER GUARDS- MODEL SGU AS MANUFACTURED BY JC- INDUSTRIES, 48" LENGTH WITH 2" WINGS
- 10 SECURITY WINDOW AS MANUFACTURED BY NORTH AMERICAN BULLETPROOF - PROVIDE LEVEL 3 SECURITY
- 11 2A FIRE EXTINGUISHER MTD. 48" TO TOP.
- 12 NEW FLAG POLES WITH LED UPLIGHTING, GC TO RUN CONDUIT AND CIRCUITING FOR NEW LIGHTING.

ARCHITECTS

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ARCHITECTURE

ENGINEERING

SITE PLANNING

INTERIOR DESIGN

PROPOSED FLOOR PLANS

RENOVATIONS TO MUNICIPAL BUILDING

BOROUGH OF EDDYSTONE

1300 E. 12TH ST.
EDDYSTONE, PA 19022

DATE	REVISIONS	DESCRIPTION	DATE
01.31.23	NO.	1	01.31.23
SCALE	1	ISSUED FOR BID	
1/8"=1'-0"			
DRAWN BY			
CHECKED BY			
PROJ. NO.			
22100			

A-1.1

SHEET OF