GENERAL NOTES

Division 23 - HVAC SPECIFICATIONS

23 05 01.00 - Common Requirements for HVAC

General

General Provisions of the Contract including General and Supplementary Conditions and General Requirements apply to work of this section.

Scope

The base bid includes furnishing all materials, labor, tools, and equipment and the performance of all work required to install a complete heating and air conditioning system as outlined herein.

Guarantee

The contractor shall provide a guarantee in written form stating that all work under this section shall be free of defective work, materials, or parts for a period of one year from the date of owner's final acceptance and shall repair, revise or replace at no cost to the owner any such defects occurring within the guarantee period. Contractor shall also state in written form that any items or occurrences arising during the guarantee period will be attended to in a timely manner and will in no case exceed four (4) working days from date of notification by owner.

Quality Assurance

Provide a complete installation in conformance with the following standards.

ASHRAE: American Society of Heating, Refrigerating and Air Conditioning Engineers

NFPA: National Fire Protection Association

SMACNA: Sheet Metal and Air Conditioning Contractors National Association.

Statewide Building Code

Permits, Fees, Inspections, Laws and Regulations

Permits and fees of every nature required in connection with this work shall be obtained and paid for by this contractor who shall also pay for all the installation fees and similar charges. Laws and regulations, which bear upon or affect the various branches of this work shall be complied with by this contractor and are hereby made a part of this contract. All work, which such laws require to be inspected, shall be submitted to the proper authorities official for inspection and a certificate of final approval must be furnished.

Tests and Adjustments

No ducts, fixtures or equipment shall be concealed or covered until they have been inspected and approved by the Architect and the inspector who shall be notified by the contractor when the work is ready for inspection.

Work shall be completely installed, tested and leak tight before inspection is required. All tests shall be repeated to the satisfaction of those making the inspection.

Architectural coordination items

Cutting and Patching: Cut and drill all openings in walls and floors required for the installation. Secure approval of Engineer before cutting and drilling. Neatly patch all openings cut.

Fire Caulking: Patching through fire rated walls and enclosures shall not diminish the rating of that wall or enclosure. Patch shall be equal to rockwool, firestop, caulk or approved "rated" patch.

Access Panels and Doors: Furnish all access panels required for proper servicing of equipment. Provide access panels for all concealed valves, vents, controls, cleanout doors, and sprinkler devices required by NFPA. Provide access panels for all fire and/or fire & smoke dampers. Provide frame as required for finish. Furnish panels to General Contractor. Exact locations to be approved by the Architect. Minimum size to be 12" x 12", units to be 16 gauge steel, locking device shall be screwdriver cam locks.

project conditions

Where new HVAC systems are required to be connected to existing HVAC systems, it is the contractor's responsibility to verify the location, size, pressure, condition, and they shall verify that the existing HVAC system is indeed the correct and appropriate HVAC system before any work is done. Provide all necessary camera scoping and dye testing as necessary. If there is any need for concern, if it is determined that the existing HVAC system is not a correct or appropriate HVAC system or not connected to a correct or appropriate HVAC system, if the condition of the existing HVAC system is not viable for re-use, or any other condition that would not allow the proper functioning of the new HVAC system, the contractor shall notify the engineer in writing immediately via RFI and wait for direction before proceeding.

23 05 03.00 – submittals for HVAC

General

Where submittals are required by the Contract Documents, they shall be prepared and supplied in accordance with the Contract Documents. In addition to Division 01, the Contractor is advised to review and comply with the requirements articulated within each Division and within each section of that Division.

Some Divisions may include a division-specific "Submittal Requirements for …." section. Where this section exists, it articulates additional requirements for submittals that apply to the work of that Division.

The following requirements help to identify, track and keep the project organized for all parties involved. They are necessary to ensure a timely turnaround and an appropriate technical review. Submittals that do not conform to the administrative requirements are rejected and returned, without technical review.

Requirements

Supply submittals for each section: Submittals shall be supplied on a section-by-section and type-by-type basis. For example, independent product data submittals shall be furnished for each section that requires product data submittals. Independent shop drawing submittals shall be furnished for each section that requires shop drawings. Refer to the specifications for identification of which submittals are required for the project. Separate PDF file packages shall be supplied for each section, for each submittal type, where electronic submittals are required. Each PDF shall represent a single standalone submittal.

Separately bound and identified submittals shall be provided where hardcopies are required.

Include a transmittal: Transmittals shall enumerate each submittal for each section of each type and iteration.

Include cover sheet / title page: The cover sheet shall include the information identified in the contract documents. It shall be included as the first page of each electronic or hard-copy submittal. An editable and printable PDF form created with editable fields and specification compliant appearance is available from KLH upon request. It is also downloadable from the KLH website at www.klhengrs.com.

Include an index: The index shall enumerate the contents of the submittal.

Include checklists: Where checklists are included with the specifications, complete and include them within the appropriate submittal. Supply complete submittals: Complete submittals of each type are required. Partial submittals will be rejected. Where a section requires a product data submittal, all product data for that section shall be supplied together, at one time, as one complete submittal. Do not send half the product data as one submittal and the other half as a separate one. When resubmittal is required (e.g. Revise and Resubmit) the revised submittal shall be more complete, more accurate and more contract-compliant than its rejected predecessor. The submittal number (for each section and type) shall increment for each subsequent submittal (00 – Original submission, 01 – First Resubmission, 02 – Second Resubmission, etc…). Resubmittals shall include a copy of the reviewers comments supplied with the prior submittal rejection and shall be amended with a description of the specific action taken to comply with the reviewer's comments. The absence of this on resubmittal is cause for rejection.

Name electronic files to match the submittal ID and cover sheet: The electronic file name of submittals shall match the submittal ID included on the submittals cover page. For example: The original/first product data submittal for Section 234116 would be labeled as " 234116.00-PD-00"; the first resubmittal of same shall be labeled " 234116.00-PD-01". The original/first shop drawings submittal file for the same section would be labeled "234116.00-SD-00"; the first resubmittal of same shall be labeled "234116.00-SD-01".

Use of Electronic Drawings from the Owner's Design Team

Plan drawings for the Project were created with AutoCAD and Revit. If expressly permitted by the Owner and the terms of the Contract, editable electronic versions of standard-scale, AutoCAD-based plan drawings may be made available for the creation of shop and as-built drawings.

Upon request when available, electronic versions of standard-scale, Navisworks (.dwf) and (.rwc) or AutoCAD 36 (.dwg) files may be made available for coordination purposes.

Due to the proprietary nature of internal design systems, editable native-software versions of some drawings, including but not limited to system diagrams and details will not be made available in an editable form. In these cases, electronic versions of the drawings may be made available only in PDF, JPG or similar non-editable electronic form, at the sole discretion of the Design Professional.

The Request Drawings form can be accessed, filled out and submitted at the following internet address (scroll down to bottom of home page): http://www.klhengrs.com.

23 05 29.00 - Hangers and Supports for HVAC Piping and Equipment

General

Support all ductwork and equipment by hangers or brackets properly from the building structure. Support from decking above is prohibited. Furnish structural steel members where required to support piping and equipment. No portion of piping or valves shall be supported by equipment.

Ductwork - Support by means of hangers as follows:

Duct Width	Hanger Size and Type Max. Spacing
30 or less	(#16 gage) 8
31 to 60	(#14 gage) 8

A pair of hangers shall be located at every transverse joint and elsewhere according to the table.

23 05 93.00 - Testing, Adjusting and Balancing for HVAC

General

Test, adjust, and balance the following mechanical systems:

Supply air systems, all pressure ranges

Return air systems.

Exhaust air systems.

Test systems for proper sound and vibration levels.

Quality Assurance

Codes and Standards:

AABC: "National Standards for Total System Balance".

ASHRAE: ASHRAE Handbook, 2011 Applications, Chapter 38, Testing, Adjusting, and Balancing.

Submittals

Certified Reports: Submit testing, adjusting, and balancing reports bearing the seal and signature of the Test and Balance Engineer. The reports shall be certified proof that the systems have been tested, adjusted, and balanced in accordance with the referenced standards; are an accurate representation of how the systems have been installed; are a true representation of how the systems are operating at the completion of the testing, adjusting, and balancing procedures; and are an accurate record of all final quantities measured, to establish normal operating values of the systems. Follow the procedures and format specified below:

Final Report: Upon verification and approval prepare final reports, type written, and organized and formatted as specified below. Submit 2 complete sets of final report to the landlord.

Report Format: Report forms shall be those standard forms prepared by the referenced standard for each respective item and system to be tested, adjusted, and balanced.

Qualifications

The contractor shall procure the services of an independent Balance and Testing Agency, approved by the Engineer, and a member of Associated Air Balance Council (AABC) or NEBB, which specializes in the balancing and testing of heating, ventilating and air conditioning systems, to balance, adjust and test all air and water systems and equipment as herein specified. All work by this agency shall be done under direct supervision of a qualified heating and ventilating Engineer employed by the agency. All instruments used by this agency shall be accurately calibrated and maintained in good working order.

Sequencing and Scheduling

Test, adjust and balance air conditioning systems during summer season and heating systems during winter season, including at least a period of operation at outside conditions within 5 deg F wet bulb temperature of maximum summer design condition, and within 10 deg F dry bulb temperature of minimum winter design condition. Take final temperature readings during seasonal operation.

Check all filters for cleanliness, provide new as required. Check dampers (volume and fire) for correct and locked position, and temperature control for completeness of installation before starting fans. Place outlet dampers in full open position. Lubricate all motors and bearings. Check fan belt tension. Check fan rotation.

Air balance and testing shall not begin until the system has been completed and is in full working order. The Contractor shall put all heating, ventilating and air conditioning systems and equipment into full operation and shall continue the operation of same during each working day of testing and balancing. The contractor shall submit within 30 days after receipt of contract, 8 copies of submittal data for the testing and balancing of the air conditioning, heating, and ventilating systems. The Air Balance and Testing Agency shall provide proof of having successfully completed at least five projects of similar size and scope. The air balancing contractor shall include the additional cost to change every fan factory installed sheave, pulley and/or belt of in order to obtain the design air flows.

Performing Testing, Adjusting and Balancing

Perform testing and balancing procedures on each system identified, in accordance with the detailed procedures outlined in the referenced standards.

Cut insulation, ductwork, and piping for installation of test probes to the minimum extent necessary to allow adequate performance of procedures.

Patch insulation, ductwork, and housings, using materials identical to those removed.

Seal ducts and piping, and test for and repair leaks.

Seal insulation to re-establish integrity of the vapor barrier.

Mark equipment settings, including damper control positions; valve indicators, fan speed control levers, and similar controls and devices, to show final settings. Mark with paint or other suitable, permanent identification materials.

Retest, adjust, and balance systems subsequent to significant system modifications, and resubmit test results.

23 07 13.00 - Duct Insulation

All liners, insulation and adhesives shall have a flame spread index not more than 25 and a smoke developed index of not more than 50.

Internal and External Insulation shall have a minimum installed thermal resistance value of R4.2 or code minimum, whichever higher.

Rigid Fiberglass Ductwork Insulation: Glass fibers bonded with a thermosetting resin. Comply with ASTM C 612, Type IB, without facing and with vapor barrier all-service jacket manufactured from kraft paper, reinforcing scrim, aluminum foil, and vinyl film.

Flexible Fiberglass Ductwork Insulation: Glass fibers bonded with a thermosetting resin. Comply with ASTM C 553, Type II, without facing and with vapor barrier all-service jacket manufactured from kraft paper, reinforcing scrim, aluminum foil, and vinyl film.

Vapor Barrier Material for Ductwork: Paper-backed aluminum-foil, except as otherwise indicated; strength and permeability rating equivalent to factory-applied vapor barriers on adjoining ductwork insulation, where available; with following additional construction characteristics:

High Puncture Resistance: Low vapor transmission (for ducts in exposed areas: Mech. Rooms, etc.)

Moderate Puncture Resistance: Medium vapor transmission (for ducts in concealed areas).

All ductwork shall be insulated except:

Flexible water ductwork

Fabric ductwork

Metal ducts with duct liner of sufficient thickness to comply with energy code.

Factory insulated flexible ductwork

Factory insulated plenums and casings

Flexible connectors

Vibration control devices

Factory insulated access panels and doors

Supply ductwork exposed in conditioned spaces excluding mechanical rooms, server rooms and electric equipment rooms

Toilet exhaust, general exhaust and return ductwork in an insulated joist or attic space.

23 09 93.00 - Sequence of Operations for HVAC Controls

Packaged Rooftop Unit (5.0 tons and above)

1. Startup

The unit shall operate on a 7 day/night programmable thermostat.

During startup, the fan shall run with the dampers in the full recirculation position. Provide occupied changeover sequence with optimum start function. When the return air temperature reaches occupied setpoint (adjustable), the minimum outside air damper shall open to the controlled minimum outdoor air position.

2. Supply Fan Control

The supply fan shall be two staged and modulate up and down based on a call for heating or cooling.

3. Space Temperature Control

Provide 7-day programmable thermostat with digital display of space temperature and setpoint (+/- deg. F. adjustable), with override feature and remote space temperature sensor.

4. Minimum Outside Air Control

During occupied mode, the minimum outside air damper shall be open to the scheduled minimum outdoor air flow and modulate proportionally with the supply fan speed to maintain the scheduled minimum outside airflow. When the supply fan speed is set to high, outside air damper shall be partially closed allowing minimum outside air flow as scheduled. As supply fan speed is set to low, damper shall fully open allowing minimum outside air flow as scheduled. Provide motor operated dampers.

5. Economizer Control

Provide dual enthalpy economizer control. Economizer control shall be enabled whenever the outside air enthalpy is lower than the return air enthalpy. Enthalpy shall be calculated from sensors which are tied to the same controller for accuracy. During economizer mode, the outside air damper shall modulate to 100% open. The economizer damper shall modulate open on a call for cooling and modulate closed on a call for heating. The return damper shall modulate inversely with the economizer damper. Economizer shall have powered relief.

6. Cooling Control

Cooling shall be controlled to maintain space temperature setpoint. On a call for cooling, the heating shall be off and supply fan speed shall be low. On a further call for cooling, the economizer shall be enabled. On a further call for cooling, disable the economizer and energize first stage cooling on. On a further call for cooling, the supply fan speed shall be high and energized second stage of cooling.

7. Heating Control

Heating shall be controlled to maintain space temperature setpoint. On a call for heating, the mechanical cooling shall be off. On a further call for heating, the economizer mode shall be disabled. On a further call for heating, the supply fan shall be set to low speedand the electric heat shall modulate on via SCR controls. On a further call for heating, the supply fan shall be set to high speed and the electric heat shall modulate on via SCR controls. On a further call for heating, the supply fan shall be set to high speed.

8. Dehumidification

Provide a hot gas reheat coil or duct mounted electric reheat coil for dehumidification. Provide space humidity sensor. When the space humidity rises above 60% (adjustable), provide full cooling and modulate the hot gas reheat coil to maintain space temperature setpoint. When the space humidity reaches setpoint, resume with normal heating & cooling operation.

9. Smoke Detector

When the smoke detector is alarmed, the system shall be alarmed and the air handler shall fail safe with manual reset.

10. Unoccupied Mode

During the unoccupied mode of operation, the RTU shall go into night setback mode.

11. Night Setback/Shutdown

At night setback/shutdown the RTU shall go to fail safe position. Fail safe position is defined by the following: The supply fan is off, the outdoor air intake damper is closed, the heating is off and the mechanical cooling is off. The supply fan shall cycle in conjunction with either the heating or cooling system to maintain a minimum/maximum space temperature depending on the season.

Packaged Rooftop Unit (3-ton unit)

1. Startup

The unit shall operate on a 7 day/night programmable thermostat.

During startup, the fan shall run with the dampers in the full recirculation position. Provide occupied changeover sequence with optimum start function. When the return air temperature reaches occupied setpoint (adjustable), the minimum outside air damper shall open to the controlled minimum outdoor air position.

2. Supply Fan Control

The supply fan speed shall be constant, run continuously during occupied mode and set to the required CFM.

3. Space Temperature Control

Provide 7-day programmable thermostat with digital display of space temperature and setpoint (+/- deg. F. adjustable), with override feature and remote space temperature sensor.

4. Minimum Outside Air Control

During occupied mode the minimum outside air damper shall be open. Provide motorized outdoor air damper.

5. Cooling Control

Cooling shall be controlled to maintain space temperature setpoint. On a call for cooling, the heating shall be off. On a further call for cooling, the mechanical cooling shall be staged on.

6. Heating Control

Heating shall be controlled to maintain space temperature setpoint. On a call for heating, the mechanical cooling shall be off. On a further call for heating, the economizer mode shall be disabled. On a further call for heating the electric heating coil shall be staged on.

7. Unoccupied Mode

During the unoccupied mode of operation, the RTU shall go into night setback mode.

8. Night Setback/Shutdown

At night setback/shutdown the RTU shall go to fail safe position. Fail safe position is defined by the following: The supply fan is off, the outdoor air intake damper is closed, the heating is off and the mechanical cooling is off. The supply fan shall cycle in conjunction with either the heating or cooling system to maintain a minimum/maximum space temperature depending on the season.

Toilet Exhaust Fans (Manual)

Toilet exhaust fans shall be controlled by local manual switch furnished, installed and wired by electrical contractor. When activated, exhaust fan motor damper shall open and fan shall start.

(Indicated by EC on HECS schedule)

Controls

Electrical contractor will provide power wiring. HVAC contractor shall provide all the low voltage wiring of HVAC units and controls, thermostats and controllers. Thermostat shall be by the manufacturer of the HVAC unit (heat/cool/auto/off) with night setback. Provide plastic protective cover for all thermostats.

Low Voltage Thermostats

Low voltage thermostats shall be furnished, installed and wired by the HVAC contractor. The electrical contractor shall provide 4" square x 1-1/2" deep wall outlet boxes (with single-gang rings) for all thermostats/sensor locations. The electrical contractor shall provide one 3/4" empty conduit from each thermostat/sensor location, turned out above accessible ceilings (in joist space or against overhead slab/deck). The HVAC/Temperature Control Contractor shall provide all other necessary conduit, raceway and wiring related work. Conduit shall be identified in ceiling cavity and shall be provided with sweep bends, bushings and dragline.

Line Voltage Thermostats

The HVAC/Temperature Control Contractor shall coordinate with the General Contractor to ensure thermal envelope is maintained at these locations.

The electrical contractor shall provide 4" square x 1- 1/2" deep wall outlet boxes at 48" above finished floor (with single-gang rings) for all thermostats. The electrical contractor shall provide line voltage power wiring, from thermostat outlet box to equipment that is to be controlled by the thermostat, in 3/4" conduit.

General Control Wiring Requirements and Installation Methods

Except where specifically indicated otherwise above, the HVAC/Temperature Control Contractor shall provide all electrical work as required for all temperature control related wiring (i.e. conduit, raceway , outlet boxes, junction boxes, wiring, etc.) in accordance with Electrical Specifications requirements. All conduit shall be 3/4" minimum.

Coordinate all thermostat/sensor locations in field (case by case) with Architect, Owner and Electrical Contractor to ensure that they are placed in locations that will not interfere with furniture, equipment, artwork, wall-hung specialties, room finishes, etc. All thermostat/sensor wall locations indicated on HVAC drawings are schematic only and must be verified case-by-case prior to rough-in.

All electrical work as described in this specification shall be per the latest edition of the National Electrical Code (NEC) and per applicable state and local codes.

Where "free-air" installation methods (either exposed above the ceilings, in bridle rings or in cable trays) are permitted under Electrical Specifications above ceilings, provide plenum-rated cables wherever plenum ceilings (if any) exist and install as defined under Electrical Specifications. Install low voltage circuits, located in concrete slabs and masonry walls, in inaccessible locations, or exposed areas, in electrical conduit regardless of what wiring methods are permitted under Electrical Specifications.

Where cable trays or bridle rings are provided by the electrical contractor for low voltage cables, these raceways may be utilized for control wiring by this contractor (provide special color coded jackets, label cable jackets per Electrical Specifications and group control wiring cables together). Provide conduit drops from cable tray/bridle ring paths to wall outlet boxes and equipment unless directed otherwise under Electrical Specifications.

Regardless of permitted methods in Electrical Specifications, all cables/wiring installed concealed by gypsum board, masonry or other inaccessible materials in walls or above ceilings shall be installed in conduit, 3/4" minimum.

All conduit, bridle rings, raceway, outlet boxes, etc. necessary for complete operational installation of control wiring shall be provided (furnished and installed) by the temperature control contractor in strict compliance with Electrical Specifications documents. Coordinate all work with all other applicable trades including the electrical contractor. Provide all required conduit work to and between equipment in a manner compliant with that described above (i.e. between VAV boxes, to boilers, starters, condensing units, etc. as applicable).

Install control wiring without splices between terminal points, color-coded. Install in neat workmanlike manner, securely fastened. Install in accordance with National Electrical Code and per Electrical Specifications.

Install circuits over 25 volt with color-coded No. 12 wire in electrical metallic tubing, per Electrical Specifications. Install circuits under 25 volt with color-coded No. 18 wire with 0.031" high temperature (105 degs. F) plastic insulation on each conductor and plastic sheath over all. Install electronic circuits with color-coded No. 22 wire with 0.023" polyethylene insulation on each conductor with plastic-jacketed copper shield over all.

Smoke Detector

All duct smoke detectors will be furnished by electrical contractor, installed by the HVAC contractor, and wired by the electrical contractor per local codes. HVAC contractor will interlock fan with smoke detector.

Motor Operated Dampers

All fresh air intakes and exhaust louvers shall have motor operated dampers. Dampers shall be low leak with blade and edge seals. All motor operated dampers shall be provided and wired by the mechanical contractor unless otherwise noted. Provide all necessary transformers, contactors, controls and wiring for interlocking equipment to motor operated dampers.

23 31 13.00 - Metal Ducts

Ductwork Materials

Exposed Ductwork Materials: Where ductwork is indicated to be exposed to view in occupied spaces, provide materials which are free from visual imperfections including pitting, seam marks, roller marks, stains and discolorations, and other imperfections, including those which would impair painting. Exposed ductwork which is to be painted shall have paint grip applied.

Sheet Metal: Except as otherwise indicated, fabricate ductwork from galvanized sheet steel, lock forming quality; with G 90 zinc coating and mill phosphatized for exposed locations. Minimum gauge shall be 24.

10. Unoccupied Mode

During the unoccupied mode of operation, the RTU shall go into night setback mode.

11. Night Setback/Shutdown

At night setback/shutdown the RTU shall go to fail safe position. Fail safe position is defined by the following: The supply fan is off, the outdoor air intake damper is closed, the heating is off and the mechanical cooling is off. The supply fan shall cycle in conjunction with either the heating or cooling system to maintain a minimum/maximum space temperature depending on the season.

8. Dehumidification

Provide a hot gas reheat coil or duct mounted electric reheat coil for dehumidification. Provide space humidity sensor. When the space humidity rises above 60% (adjustable), provide full cooling and modulate the hot gas reheat coil to maintain space temperature setpoint. When the space humidity reaches setpoint, resume with normal heating & cooling operation.

9. Smoke Detector

When the smoke detector is alarmed, the system shall be alarmed and the air handler shall fail safe with manual reset.

Ductwork Materials

Volume Dampers: Provide volume dampers in all branch ducts or as required for balancing to required air flows.

Fittings: Provide radius type fittings fabricated of multiple sections with maximum 15 deg. change of direction per section. Unless specifically detailed otherwise, use 45 deg. laterals and 45 deg. elbows for branch takeoff connections. Where 90 deg. branches are indicated, provide conical type tees.

Duct Sealant: Non-hardening, non-migrating mastic or liquid elastic sealant, type applicable for fabrication/installation detail, as compounded and recommended by manufacturer specifically for sealing joints and seams in ductwork.

Duct Cement: Non-hardening migrating mastic or liquid neoprene based cement, type applicable for fabrication/installation detail, as compounded and recommended by manufacturer specifically for cementing fitting components, or longitudinal seams in ductwork.

Ductwork Support Materials: Except as otherwise indicated, provide hot-dipped galvanized steel fasteners, anchors, rods, straps, trim and angles for support of ductwork.

Flexible Ducts

Either spot-wound spring steel with flameproof vinyl sheathing, or corrugated aluminum. Unless specifically mentioned, the maximum length of flex duct on the supply equals 5 feet. Flex is not allowed for return, relief or exhaust applications. The flexible ducts indicated for use in the H.V.A.C. system shall conform to the requirements of UL 2518 for Class 0 or Class 1 flexible air ducts and shall be so identified.

Where installed in unconditioned spaces other than return air plenums, provide 1" thick 1-1/2 lb. continuous flexible fiberglass sheath with vinyl vapor barrier jacket.

Installation is not permitted above drywall ceilings and inaccessible ceilings.

Fabrication

Shop fabricate ductwork in 4, 8, 10 or 12-ft lengths, unless otherwise indicated or required to complete runs. All ductwork shall be Pittsburgh construction with a minimum of thickness of 24 gauge. In addition, ductwork used in systems over 3" W.G. shall have cold sealant applied. Shop fabricate ductwork of gauges and reinforcement complying with SMACNA "HVAC Duct Construction Standards".

Lined Duct

Fabricate ductwork with duct liner in each section of duct where indicated. Laminate liner to internal surfaces of duct in accordance with instructions by manufacturers of lining and adhesive, and fasten with mechanical fasteners. Duct liner to be 3-lb density for acoustic requirements 1" thick or as noted. Size of ductwork shown on the drawings is free net area, outside dimension of ducts will need to be increased if lined duct is used.

Size of ductwork shown on the drawings is free net area, outside dimension of ducts will need to be increased if lined duct is used.

Duct Liner: Fibrous glass of thickness indicated. 3-lb density. All liners, insulation and adhesives shall have a flame spread index not more than 25 and a smoke developed index of not more than 50.

Duct Liner Adhesive

Duct Liner Fasteners: Comply with SMACNA HVAC Duct Construction Standards.

Installation of Metal Ductwork

General: Assemble and install ductwork in accordance with recognized industry practices which will achieve air-tight (5% leakage for systems rated 3" and under; 1% for systems rated over 3") and noiseless (no objectionable noise) systems, capable of performing each indicated service. Install each run with minimum number of joints. Align ductwork accurately at connections, within 1/8" misalignment tolerance and with internal surfaces smooth. Support ducts rigidly with suitable ties, braces, hangers and anchors of type which will hold ducts true-to-shape and to prevent buckling. Support vertical ducts at every floor.

Sealing: Seal all longitudinal seams, S's and drives and all joints with mastic or cement. Install according to SMACNA standards.

Balancing Dampers: The sheet metal contractor shall be fully responsible for installing balancing dampers in the ductwork, (whether shown on the drawing or not) in order to arrive at the intended air flow. The balancing sub-contractor shall provide direction and assistance in determining locations where dampers are required. Additional dampers, if required shall be installed at no additional cost to the owner.

Wall Penetrations: Seal and pack around all ducts and piping sleeves which pass through walls that extend to bottom side of structure and rated walls.

Field Fabrication: Complete fabrication of work at project as necessary to match shop-fabricated work and accommodate installation requirements.

Routing: Locate ductwork runs, except as otherwise indicated, vertically and horizontally and avoid diagonal runs wherever possible. Run ductwork in shortest route which does not obstruct useable space or block access for servicing building and its equipment. Hold ducts close to walls, overhead construction, columns, and other structural and permanent enclosure elements of building. Limit clearance to 1/2" where furring is shown for enclosure or concealment of ducts, but allow for insulation thickness, if any. Where possible, locate insulated ductwork for 1" clearance outside of insulation. Wherever possible in finished and occupied spaces, conceal ductwork from view, by locating in mechanical shafts, hollow wall construction or above suspended ceilings. Do not encase horizontal runs in solid partitions, except as specifically shown.

Coordinate layout with suspended ceiling and lighting layouts and similar finished work.

Electrical Equipment Spaces: Do not route ductwork through transformer vaults and their electrical equipment spaces and enclosures.

Penetrations: Where ducts pass through interior partitions and exterior walls, and are exposed to view, conceal space between construction opening and the duct or duct insulation with sheet metal flanges of same gage as duct. Overlap opening on 4 sides by at least 1-1/2". Fasten to duct and substrate.

All dampers shall be low leakage with edge and blade seals. Damper manufacturers are subject to specification compliance. Provide products by one of the following:

Greenheck Fan Corporation

Nailor Industries

Ruskin Company

Young Regulator Company

Coordination: Coordinate duct installations with installation of accessories, dampers, coil frames, equipment, controls and other associated work of ductwork system.

Installation of Duct Liner

General: Install duct liner in accordance with SMACNA HVAC Duct Construction Standards. Size of ductwork shown on the drawings is free net area, outside dimension of ducts will need to be increased if lined duct is used.

Store internally lined ductwork up off of the floor. Protect internally lined ductwork from water and dust. "Butter the leading edge of all internal duct lining with the manufacturer's recommended adhesive. Inspect and repair all damaged lining prior to installation of ductwork.

Installation of Flexible Ducts

Maximum Length: For any duct run using flexible ductwork, do not exceed 5' - 0" extended length. Installation shall have smooth full radius turns down to diffuser.

Installation not permitted above inaccessible ceilings.

Access Panels

Furnish all access panels required for proper servicing of equipment. Provide access panels for all concealed valves, vents, controls and cleanout doors, and sprinkler devices required by NFPA. Provide frame as required for finish. Furnish panels to General Contractor. Exact locations to be approved by the Architect. Minimum size to be 12" x 12", units to be 16 gauge steel, locking device shall be screwdriver cam locks.

Smoke Detector

All duct smoke detectors will be furnished by electrical contractor, installed by the HVAC contractor, and wired by the electrical contractor per local codes. HVAC contractor will interlock fan with smoke detector.

Motor Operated Dampers

All fresh air intakes and exhaust louvers shall have motor operated dampers. Dampers shall be low leak with blade and edge seals. All motor operated dampers shall be provided and wired by the mechanical contractor unless otherwise noted. Provide all necessary transformers, contactors, controls and wiring for interlocking equipment to motor operated dampers.

23 34 23.00 - HVAC Power Ventilators

Inline Centrifugal Fans (IF REQUIRED)

General: Provide inline centrifugal fans of sizes and arrangement as indicated, and of capacities and having accessories as scheduled.

Housing: Aluminum or galvanized steel housing inlet and outlet flanges, and support bracket adaptable to floor, side wall, or ceiling mounting.

Direct-Drive Units: Provide ball bearing motor encased in housing so as to be out of air stream. Provide factory wiring to disconnect switch located on outside of fan housing.

Provide NEMA 1 disconnect factory mounted. For single-phase fractional HP fans use a toggle type disconnect switch. On three-phase integral HP fans use a NEMA 1 safety switch.

Wheel: Backward or forward inclined as scheduled, non-overloading, statically and dynamically balanced.

Accessories: Provide the following accessories as indicated.

Volume Control Damper: Provide manual controlled volume damper in fan outlet with quadrant and lock.

Outlet Damper: Provide manual or motorized outlet damper as scheduled.

Dampers utilized for pressure relief applications shall be tight seal, motorized, with blade and edge seals.

Companion Flanges: Provide matching flanges on inlet and outlet to connect ductwork to fan.

Fittings: Provide radius type fittings fabricated of multiple sections with maximum 15 deg. change of direction per section. Unless specifically detailed otherwise, use 45 deg. laterals and 45 deg. elbows for branch takeoff connections. Where 90 deg. branches are indicated, provide conical type tees.

Duct Sealant: Non-hardening, non-migrating mastic or liquid elastic sealant, type applicable for fabrication/installation detail, as compounded and recommended by manufacturer specifically for sealing joints and seams in ductwork.

Duct Cement: Non-hardening migrating mastic or liquid neoprene based cement, type applicable for fabrication/installation detail, as compounded and recommended by manufacturer specifically for cementing fitting components, or longitudinal seams in ductwork.

Ductwork Support Materials: Except as otherwise indicated, provide hot-dipped galvanized steel fasteners, anchors, rods, straps, trim and angles for support of ductwork.

Flexible Ducts

Either spot-wound spring steel with flameproof vinyl sheathing, or corrugated aluminum. Unless specifically mentioned, the maximum length of flex duct on the supply equals 5 feet. Flex is not allowed for return, relief or exhaust applications. The flexible ducts indicated for use in the H.V.A.C. system shall conform to the requirements of UL 2518 for Class 0 or Class 1 flexible air ducts and shall be so identified.

Where installed in unconditioned spaces other than return air plenums, provide 1" thick 1-1/2 lb. continuous flexible fiberglass sheath with vinyl vapor barrier jacket.

Installation is not permitted above drywall ceilings and inaccessible ceilings.

Fabrication

Shop fabricate ductwork in 4, 8, 10 or 12-ft lengths, unless otherwise indicated or required to complete runs. All ductwork shall be Pittsburgh construction with a minimum of thickness of 24 gauge. In addition, ductwork used in systems over 3" W.G. shall have cold sealant applied. Shop fabricate ductwork of gauges and reinforcement complying with SMACNA "HVAC Duct Construction Standards".

Lined Duct

Fabricate ductwork with duct liner in each section of duct where indicated. Laminate liner to internal surfaces of duct in accordance with instructions by manufacturers of lining and adhesive, and fasten with mechanical fasteners. Duct liner to be 3-lb density for acoustic requirements 1" thick or as noted. Size of ductwork shown on the drawings is free net area, outside dimension of ducts will need to be increased if lined duct is used.

Size of ductwork shown on the drawings is free net area, outside dimension of ducts will need to be increased if lined duct is used.

Duct Liner: Fibrous glass of thickness indicated. 3-lb density. All liners, insulation and adhesives shall have a flame spread index not more than 25 and a smoke developed index of not more than 50.

Duct Liner Adhesive

Duct Liner Fasteners: Comply with SMACNA HVAC Duct Construction Standards.

Installation of Metal Ductwork

General: Assemble and install ductwork in accordance with recognized industry practices which will achieve air-tight (5% leakage for systems rated 3" and under; 1% for systems rated over 3") and noiseless (no objectionable noise) systems, capable of performing each indicated service. Install each run with minimum number of joints. Align ductwork accurately at connections, within 1/8" misalignment tolerance and with internal surfaces smooth. Support ducts rigidly with suitable ties, braces, hangers and anchors of type which will hold ducts true-to-shape and to prevent buckling. Support vertical ducts at every floor.

Sealing: Seal all longitudinal seams, S's and drives and all joints with mastic or cement. Install according to SMACNA standards.

Balancing Dampers: The sheet metal contractor shall be fully responsible for installing balancing dampers in the ductwork, (whether shown on the drawing or not) in order to arrive at the intended air flow. The balancing sub-contractor shall provide direction and assistance in determining locations where dampers are required. Additional dampers, if required shall be installed at no additional cost to the owner.

Wall Penetrations: Seal and pack around all ducts and piping sleeves which pass through walls that extend to bottom side of structure and rated walls.

Field Fabrication: Complete fabrication of work at project as necessary to match shop-fabricated work and accommodate installation requirements.

Routing: Locate ductwork runs, except as otherwise indicated, vertically and horizontally and avoid diagonal runs wherever possible. Run ductwork in shortest route which does not obstruct useable space or block access for servicing building and its equipment. Hold ducts close to walls, overhead construction, columns, and other structural and permanent enclosure elements of building. Limit clearance to 1/2" where furring is shown for enclosure or concealment of ducts, but allow for insulation thickness, if any. Where possible, locate insulated ductwork for 1" clearance outside of insulation. Wherever possible in finished and occupied spaces, conceal ductwork from view, by locating in mechanical shafts, hollow wall construction or above suspended ceilings. Do not encase horizontal runs in solid partitions, except as specifically shown.

Coordinate layout with suspended ceiling and lighting layouts and similar finished work.

Electrical Equipment Spaces: Do not route ductwork through transformer vaults and their electrical equipment spaces and enclosures.

Penetrations: Where ducts pass through interior partitions and exterior walls, and are exposed to view, conceal space between construction opening and the duct or duct insulation with sheet metal flanges of same gage as duct. Overlap opening on 4 sides by at least 1-1/2". Fasten to duct and substrate.

All dampers shall be low leakage with edge and blade seals. Damper manufacturers are subject to specification compliance. Provide products by one of the following:

Greenheck Fan Corporation

Nailor Industries

Ruskin Company

Young Regulator Company

Coordination: Coordinate duct installations with installation of accessories, dampers, coil frames, equipment, controls and other associated work of ductwork system.

Installation of Duct Liner

General: Install duct liner in accordance with SMACNA HVAC Duct Construction Standards. Size of ductwork shown on the drawings is free net area, outside dimension of ducts will need to be increased if lined duct is used.

Store internally lined ductwork up off of the floor. Protect internally lined ductwork from water and dust. "Butter the leading edge of all internal duct lining with the manufacturer's recommended adhesive. Inspect and repair all damaged lining prior to installation of ductwork.

according to roofing manufacturer's recommendation and specifications.

Electrical Wiring: Install electrical devices furnished by manufacturer but not specified to be factory-mounted. Furnish copy of manufacturer's wiring diagram submittal to Electrical Installer.

Verify that electrical wiring installation is in accordance with manufacturer's submittal and installation requirements of Division 26 sections. Ensure that rotation is in direction indicated and intended for proper performance. Do not proceed with centrifugal fan start-up until wiring installation is acceptable to fan Installer.

Field Quality Control

Testing: After installation of ventilators has been completed, test each ventilator to demonstrate proper operation of units at performance requirements specified. When possible, field correct malfunctioning units, then retest to demonstrate compliance. Replace units, which cannot be satisfactorily corrected.

Adjusting and Cleaning

Cleaning: Clean factory-finished surfaces. Repair any marred or scratched surfaces with manufacturer's touch-up paint.

Spare Parts

General: Furnish to Owner, with receipt, one spare set of belts for each belt drive power ventilator.

23 37 13.00 - Diffusers, Registers and Louvers

Ceiling Air Diffusers

Diffuser Faces:

Square: Square housing, core of square concentric louvers, square or round duct connection.

Diffuser Mountings:

Surface Mount: Diffuser shall have rolled edge below finished ceiling for surface mounting or diffuser shall be furnished with accessory plaster frame.

Lay-In: Diffuser housing sized to fit between ceiling exposed suspension tee bars and rest on top surface of tee bar.

Diffuser Dampers:

Opposed Blade Dampers: Multiple opposed blade dampers connected to linkage adjustable from face of diffuser with key.

Diffuser Acoustic Performance: NC less than or equal to 30

Diffuser Accessories: Plaster Ring: Perimeter ring designed to act as plaster stop and diffuser anchor.

Titus TRM frame kit

Diffuser Finishes: White Enamel: Semi-gloss white enamel prime finish.

Manufacturer: Subject to compliance with

SCOPE OF WORK

PROVIDE ONE NEW 20 TON ROOF TOP GAS HEAT UNIT. PROVIDE FABRIC DUCTWORK FOR POOL, RECEPTION & VIEWING AREA AS SHOWN IN PLAN AND PROVIDE METAL DUCTWORK FOR OTHER AREA AS SHOWN IN PLAN AND NECESSARY ACCESSORIES FOR COMPLETE HVAC SYSTEM.

PROVIDE TWO NEW RESTROOM EXHAUST FANS & FOUR NEW OTHER EXHAUST FANS AS SHOWN IN PLAN. PROVIDE TWO NEW POOL AREA EXHAUST FANS.

COORDINATE WITH GC ANY ADDITIONAL REFRIGERATION WORK REQUIRED AND PLUMBING CONTRACTOR PROVIDING CONDENSATE LINES FOR MECHANICAL EQUIPMENT.

MECHANICAL PLAN NOTES

A. PROVIDE ONE NEW 20 TON ROOF TOP GAS HEAT UNIT. PROVIDE FABRIC DUCTWORK FOR POOL, RECEPTION & VIEWING AREA AS SHOWN IN PLAN AND PROVIDE METAL DUCTWORK FOR OTHER AREA AS SHOWN IN PLAN. PROVIDE FLEXIBLE CONNECTORS ON SUPPLY AIR DUCT CONNECTIONS. INSTALL FIRE DAMPERS IN ANY FIRE WALLS AND BETWEEN FLOORS. TRANSITION TO DUCT SIZES SHOWN. PROVIDE DUCTWORK AND AIR DISTRIBUTION DEVICES AS INDICATED ON THE PLAN. REFER TO MECHANICAL SCHEDULE FOR ADDITIONAL REQUIREMENTS.

B. FOR SYSTEM OVER 2,000 CFM CHECK FOR DUCT MOUNTED AIR SMOKE DETECTORS AND THAT MEET THE REQUIREMENTS OF U.L. 268A, INTERLOCKED TO SHUTDOWN HVAC UNIT UPON DETECTION OF SMOKE. IF NECESSARY PROVIDE SMOKE DETECTOR WITH AN ANNUNCIATOR, ALARM AND POWER L.E.D.'S FOR VISIBLE AND AUDIBLE ALARM SIGNAL, AND VISIBLE TROUBLE SIGNAL. MOUNT ANNUNCIATOR ON ROOM SIDE OF CEILING.

C. ALL DUCTS SHALL BE MINIMUM 26 GAUGE SHEET METAL WITH EXTERNAL DUCT WRAP INSULATION FOR CONCEALED DUCTS AND ALL EXPOSED DUCTS WITH INTERNAL INSULATION. ALL DUCTS TO BE MANUFACTURED AND INSTALLED ACCORDING TO ASHRAE AND SMACNA METAL DUCT CONSTRUCTION STANDARD, LATEST EDITION. ALL MATERIALS WILL CONFORM TO NFPA 90A.

D. THERMOSTATS & HUMIDISTAT SHALL BE 7-DAY PROGRAMMABLE TYPE. MOUNT THERMOSTAT 48" A.F.F. COORDINATE LOCATION OF THERMOSTAT / HUMIDISTAT WITH ARCHITECT / OWNER.

E. ALL INTERIOR AIR DUCTS WITH INSULATION SHALL HAVE A MINIMUM OF THICKNESS OF 1.5", R-6 INSULATION AND EXTERIOR DUCTS SHALL HAVE R-12 INSULATION.

F. ALL SEAMS, JOINTS, ETC WILL BE SEALED TO MAKE AIR DUCT AIRTIGHT. PRESSURE SENSITIVE MATERIALS AND OTHERS APPROVED BY LATEST SMACNA. SEALING MATERIALS WILL BE USED.

G. ALL EVAPORATOR UNITS SHALL HAVE A FLOAT SWITCH TO CONTROL OVERFLOW THAT WILL AUTOMATICALLY SHUT DOWN THE A/C SYSTEM. THE DEVICE SHALL BE ATTACHED TO THE SECONDARY DRAIN OUTLET ON THE UNIT.

H. ALL HVAC UNIT CONDENSATE DRAINS WILL BE PVC FULL DIAMETER OF OUTLET AND WILL TERMINATE IN THE NEAREST APPROVED PLACE OF DISPOSAL.

I. ALL EQUIPMENT AND MATERIALS WILL BE INSTALLED ACCORDING TO THE MANUFACTURER'S INSTRUCTIONS AND ACCORDING TO THE BEST PRACTICE.

J. TESTING AND BALANCING SHALL BE DONE IN ACCORDANCE WITH THE NATIONAL ENVIRONMENTAL BALANCING BUREAU (N.E.B.B.), THE ASSOCIATED AIR BALANCE COUNCIL (A.A.B.C) NATIONAL STANDARDS OR EQUIVALENT PROCEDURES.

K. HANGER ATTACHMENTS TO THE STEEL STRUCTURE WILL BE RATED POWDER ACTUATED FASTENERS, "C" CLAMPS, WELDED STUDS, CLAMP HANGERS, JOIST CLAMPS OR OTHER METHODS RECOMMENDED BY SMACNA'S "METAL AND FLEXIBLE STANDARDS", CHAPTER 4, AND WILL HAVE A MINIMUM SAFETY MARGIN OF 4:1. SUSPENDED FROM TOP CHORD OF JOISTS, NOTHING FROM DECK OR CROSS BRACING.

L. ALL HVAC CONTROLS AND CONTROL WIRING SHALL BE PROVIDED BY THE MECHANICAL CONTRACTOR.

M. ALL COMBUSTIBLE MATERIALS EXPOSED WITHIN THE PLENUM SPACE MUST COMPLY WITH 2021 INTERNATIONAL MECHANICAL CODE SECTION 602.2 FLAME SPREAD INDEX OF NOT MORE THAN 25 AND A SMOKE-DEVELOPED RATING OF NOT MORE THAN 50.

N. ENVIRONMENTAL EXHAUST DUCT TERMINATIONS SHALL BE NO CLOSER THAN 3' FROM A PROPERTY LINE OR 3' FROM OPENINGS BACK INTO THE BUILDING OR 3' TO THE WINDOW.

O. PRODUCT CONVEYING EXHAUST TERMINATIONS MAY BE NO LESS THAN 10' ABOVE GRADE, TO THE PROPERTY LINE(SHOW PROPERTY LINES), OR FROM OPENING BACK THE BUILDING OR 3' FROM AN EXTERIOR WALL OR ROOF AS PER 2021 INTERNATIONAL MECHANICAL CODE 501.3.1.

P. FACTORY MADE FLEXIBLE AIR DUCTS AND CONNECTORS SHALL BE NOT MORE THAN 5 FEET IN LENGTH AND SHALL NOT BE USED IN LINE OF RIGID ELBOWS OR FITTINGS. FLEXIBLE AIR DUCTS SHALL BE PERMITTED TO BE USED AS AN ELBOW AT A TERMINAL DEVICE.

SAFESPLASH NEWINGTON, CT BUILDING DEPARTMENT NOTES

ALL WORK SHALL COMPLY WITH APPLICABLE SECTIONS OF THE 2021 INTERNATIONAL BUILDING CODE, AND ALL AMENDMENTS AND RULES AND REGULATIONS OF THE DEPARTMENT OF BUILDINGS TO DATE.

1. ALL HEATING AND COOLING LOADS CALCULATED PER ASHRAE/ACCA 183.
2. VENTILATION FOR ALL AREA SHALL COMPLY WITH 2021 INTERNATIONAL MECHANICAL CODE, CHAPTER 4.
3. THE LICENSED PROFESSIONAL ENGINEER, ARCHITECT OR OTHER PERSON HAVING NOT LESS THAN FIVE (5) YEARS EXPERIENCE SUPERVISING THE INSTALLATION OF SUCH MECHANICAL SYSTEMS AND CONDUCTING SUCH TESTS WILL FILE DOCUMENTATION AND REPORTS OF TESTS THAT THE SYSTEM COMPLIES WITH THE CONSTRUCTION DOCUMENTS AND APPLICABLE LAWS.
4. TESTS OF MECHANICAL SYSTEMS SHALL BE PERFORMED IN ACCORDANCE WITH THE FOLLOWING SECTIONS OF THE 2021 INTERNATIONAL MECHANICAL CODE:
   A. VENTILATION SYSTEM BALANCING 2021 INTERNATIONAL MECHANICAL CODE - 403.3
5. THE FOLLOWING WORK ITEMS, COMPONENTS, MATERIALS, CAPACITIES, ETC. SHALL COMPLY WITH THE REFERENCED CODE OR STANDARD:
   A. STANDARDS OF HEATING 2021 INTERNATIONAL MECHANICAL CODE - 309.1
   B. DUCT CONSTRUCTION AND INSTALLATION 2021 INTERNATIONAL MECHANICAL CODE - 603
   C. AIR INTAKES, EXHAUSTS AND RELIEF 2021 INTERNATIONAL MECHANICAL CODE - 401.5
   D. AIR FILTERS 2021 INTERNATIONAL MECHANICAL CODE - 605
   E. MANUAL AND AUTOMATIC FIRE AND SMOKE CONTROLS FOR AIR DISTRIBUTION SYSTEMS - 2021 INTERNATIONAL MECHANICAL CODE - 606
   F. GAS FIRED EQUIPMENT - INTERNATIONAL FUEL GAS CODE
6. MINIMUM TEMPERATURE TO BE MAINTAINED IN OCCUPIED SPACES DURING HEATING SEASON: 68 DEG. FAHRENHEIT.
7. A STATEMENT SHALL BE FILED BY THE OWNER OR TENANT IN POSSESSION THAT THE VENTILATION SYSTEM WILL BE KEPT IN CONTINUOUS OPERATION AT ALL TIMES DURING THE NORMAL OCCUPANCY OF THE STRUCTURE AS REQUIRED BY 2021 INTERNATIONAL MECHANICAL CODE - 403.3
8. REFER TO ARCHITECTURAL DRAWINGS FOR REQUIRED FIRE-RATED WALL AND SMOKE WALL CONSTRUCTION AND LOCATION.
9. THESE PLANS ARE APPROVED ONLY FOR THE WORK INDICATED ON THE APPLICATION SPECIFICATION SHEET. ALL OTHER MATTERS SHOWN ARE NOT TO BE RELIED UPON OR TO BE CONSIDERED AS EITHER BEING APPROVED OR IN ACCORDANCE WITH APPLICABLE CODES.
10. SMOKE DETECTOR SHALL MEET UL268A
11. VENTILATION SYSTEMS SHALL BE BALANCED TO MAINTAIN THE MINIMUM VENTILATION AIRFLOW RATE AS SHOWN IN VENTILATION REQUIREMENT TABLE. THIS SYSTEM SHALL BE BALANCED BY APPROVED METHOD. CONTRACTOR TO SUBMIT THE AIR - BALANCE REPORT TO INSPECTOR
12. VENTILATION FOR ALL AREA SHALL COMPLY WITH 2021 INTERNATIONAL MECHANICAL CODE 401.
13. MECHANICAL SYSTEMS SHALL BE COMMISSIONED PER 2021 INTERNATIONAL ENERGY CONSERVATION CODE C408.2, C408.2.1, C408.2.5 FINAL COMMISSIONING REPORT SHALL BE DUE WITHIN 90 DAYS OF RECEIPT OF CERTIFICATE OF OCCUPANCY.
14. A COMMISSIONING PLAN SHALL BE DEVELOPED BY A LICENSED DESIGN PROFESSIONAL, MECHANICAL ENGINEER OR APPROVED AGENCY.
15. A PRELIMINARY REPORT OF COMMISSIONING TEST PROCEDURES AND RESULTS SHALL BE COMPLETED AND CERTIFIED BY THE LICENSED DESIGN PROFESSIONAL, ELECTRICAL ENGINEER, MECHANICAL ENGINEER OR APPROVED AGENCY AND PROVIDED TO THE BUILDING OWNER OR OWNER'S AUTHORIZED AGENT AS PER 2021 INTERNATIONAL ENERGY CONSERVATION CODE.
16. A FINAL REPORT OF TEST PROCEDURES AND RESULTS IDENTIFIED AS "FINAL COMMISSIONING REPORT" SHALL BE DELIVERED TO THE BUILDING OWNER OR OWNER'S AUTHORIZED AGENT. THE REPORT SHALL BE ORGANIZED WITH MECHANICAL SYSTEM AND SERVICE HOT WATER SYSTEM FINDINGS IN SEPARATE SECTIONS TO ALLOW INDEPENDENT REVIEW.
17. A WRITTEN REPORT DESCRIBING THE ACTIVITIES AND MEASUREMENTS COMPLETED IN ACCORDANCE WITH 2021 INTERNATIONAL ENERGY CONSERVATION CODE SECTION C408.2.5.1.

THERMOSTATIC CONTROLS

C403.4.1 THERMOSTATIC CONTROLS
THE SUPPLY OF HEATING AND COOLING ENERGY TO EACH ZONE SHALL BE CONTROLLED BY INDIVIDUAL THERMOSTATIC CONTROLS CAPABLE OF RESPONDING TO TEMPERATURE WITHIN THE ZONE. WHERE HUMIDIFICATION OR DEHUMIDIFICATION OR BOTH IS PROVIDED, NOT FEWER THAN ONE HUMIDITY CONTROL DEVICE SHALL BE PROVIDED FOR EACH HUMIDITY CONTROL SYSTEM.

EXCEPTION: INDEPENDENT PERIMETER SYSTEMS THAT ARE DESIGNED TO OFFSET ONLY BUILDING ENVELOPE HEAT LOSSES, GAINS OR BOTH SERVING ONE OR MORE PERIMETER ZONES ALSO SERVED BY AN INTERIOR SYSTEM PROVIDED THAT BOTH OF THE FOLLOWING CONDITIONS ARE MET:

THE PERIMETER SYSTEM INCLUDES NOT FEWER THAN ONE THERMOSTATIC CONTROL ZONE FOR EACH BUILDING EXPOSURE HAVING EXTERIOR WALLS FACING ONLY ONE ORIENTATION (WITHIN ± 45 DEGREES) (0.8 RAD) FOR MORE THAN 50 CONTIGUOUS FEET (15 240 MM).
THE PERIMETER SYSTEM HEATING AND COOLING SUPPLY IS CONTROLLED BY THERMOSTATS LOCATED WITHIN THE ZONES SERVED BY THE SYSTEM.

C403.4.1.2 DEADBAND
WHERE USED TO CONTROL BOTH HEATING AND COOLING, ZONE THERMOSTATIC CONTROLS SHALL BE CONFIGURED TO PROVIDE A TEMPERATURE RANGE OR DEADBAND OF NOT LESS THAN 5°F (2.8°C) WITHIN WHICH THE SUPPLY OF HEATING AND COOLING ENERGY TO THE ZONE IS SHUT OFF OR REDUCED TO A MINIMUM.
EXCEPTIONS:
THERMOSTATS REQUIRING MANUAL CHANGEOVER BETWEEN HEATING AND COOLING MODES.
OCCUPANCIES OR APPLICATIONS REQUIRING PRECISION IN INDOOR TEMPERATURE CONTROL AS APPROVED BY THE CODE OFFICIAL.

C403.4.1.3 SETPOINT OVERLAP RESTRICTION
WHERE A ZONE HAS A SEPARATE HEATING AND A SEPARATE COOLING THERMOSTATIC CONTROL LOCATED WITHIN THE ZONE, A LIMIT SWITCH, MECHANICAL STOP OR DIRECT DIGITAL CONTROL SYSTEM WITH SOFTWARE PROGRAMMING SHALL BE CONFIGURED TO PREVENT THE HEATING SETPOINT FROM EXCEEDING THE COOLING SETPOINT AND TO MAINTAIN A DEADBAND IN ACCORDANCE WITH SECTION C403.4.1.2.

C403.2.4.2 OFF-HOUR CONTROLS
EACH ZONE SHALL BE PROVIDED WITH THERMOSTATIC SETBACK CONTROLS THAT ARE CONTROLLED BY EITHER AN AUTOMATIC TIME CLOCK OR PROGRAMMABLE CONTROL SYSTEM.
EXCEPTIONS:
ZONES THAT WILL BE OPERATED CONTINUOUSLY.
ZONES WITH A FULL HVAC LOAD DEMAND NOT EXCEEDING 6,800 BTU/H (2 KW) AND HAVING A MANUAL SHUTOFF SWITCH LOCATED WITH READY ACCESS.

C403.4.2.1 THERMOSTATIC SETBACK
THERMOSTATIC SETBACK CONTROLS SHALL BE CONFIGURED TO SET BACK OR TEMPORARILY OPERATE THE SYSTEM TO MAINTAIN ZONE TEMPERATURES DOWN TO 55°F (13°C) OR UP TO 85°F (29°C).

C403.4.2.2 AUTOMATIC SETBACK AND SHUTDOWN
AUTOMATIC TIME CLOCK OR PROGRAMMABLE CONTROLS SHALL BE CAPABLE OF STARTING AND STOPPING THE SYSTEM FOR SEVEN DIFFERENT DAILY SCHEDULES PER WEEK AND RETAINING THEIR PROGRAMMING AND TIME SETTING DURING A LOSS OF POWER FOR NOT FEWER THAN 10 HOURS. ADDITIONALLY, THE CONTROLS SHALL HAVE A MANUAL OVERRIDE THAT ALLOWS TEMPORARY OPERATION OF THE SYSTEM FOR UP TO 2 HOURS; A MANUALLY OPERATED TIMER CONFIGURED TO OPERATE THE SYSTEM FOR UP TO 2 HOURS; OR AN OCCUPANCY SENSOR.

C403.4.2.3 AUTOMATIC START
AUTOMATIC START CONTROLS SHALL BE PROVIDED FOR EACH HVAC SYSTEM. THE CONTROLS SHALL BE CONFIGURED TO AUTOMATICALLY ADJUST THE DAILY START TIME OF THE HVAC SYSTEM IN ORDER TO BRING EACH SPACE TO THE DESIRED OCCUPIED TEMPERATURE IMMEDIATELY PRIOR TO SCHEDULED OCCUPANCY.

MECHANICAL SYMBOLS

- EXHAUST FAN
- SUPPLY OR OUTSIDE AIR DUCT
- RETURN OR EXHAUST AIR DUCT
- INSULATED RIGID DUCTWORK
- DUCT TRANSITION
- MANUAL VOLUME DAMPER
- FLEXIBLE DUCTWORK R-6.0
- SUPPLY DIFFUSER REFER TO DIFFUSER SCHEDULE FOR SPECIFICATIONS
- RETURN DIFFUSER REFER TO DIFFUSER SCHEDULE FOR SPECIFICATIONS
- ROOF MOUNTED EXHAUST FAN OUTLET
- ROOFTOP UNIT
- DUCT SMOKE DETECTOR
- PROGRAMMABLE THERMOSTAT
- TEMPERATURE SENSOR
- MOTORIZED DAMPER
- FIRE DAMPER
- Ø ROUND DUCT DIAMETER
- CFM CUBIC FEET/ MINUTE
- S/A SUPPLY AIR
- R/A RETURN AIR
- SG SUPPLY GRILLE
- PU POOL DOAS UNIT
- PEF POOL EXHAUST FAN
- CD CONDENSATE PIPING

NOTE: THIS PROJECT MAY NOT USE EVERY SYMBOL OR DEVICE APPEARING ON THIS LEGEND.

OCCUPANCY CALCULATION PER IMC 2021, TABLE 403.3.1.1

VIEWING AREA	1198 SQ. FT.	120 PEOPLE PER 1000 SQ.FT.	144 PEOPLE
STAFF ROOM	154 SQ. FT.	5 PEOPLE PER 1000 SQ.FT.	7 PEOPLE
OFFICE	150 SQ. FT.	5 PEOPLE PER 1000 SQ.FT.	3 PEOPLE
RECEPTION/LOBBY	258 SQ. FT.	30 PEOPLE PER 1000 SQ.FT.	5 PEOPLE
CONFERENCE/PARTY ROOM	477 SQ. FT.	120 PEOPLE PER 1000 SQ.FT.	30 PEOPLE
		TOTAL	189 PEOPLE

VENTILATION REQUIREMENTS PER IMC 2021 WITH OCCUPANCY MODIFICATION AS PER HOUSE RULES, TABLE 403.3.1.1

VIEWING AREA	1198 SQ. FT. X	0.06 CFM/SQ. FT. =	72 CFM
	144 PEOPLE. X	7.5 CFM/PEOPLE. =	1080 CFM
STAFF ROOM	154 SQ. FT. X	0.06 CFM/SQ. FT. =	9 CFM
	7 PEOPLE. X	5 CFM/PEOPLE. =	35 CFM
OFFICE	150 SQ. FT. X	0.06 CFM/SQ. FT. =	9 CFM
	3 PEOPLE. X	5 CFM/PEOPLE. =	15 CFM
RECEPTION/LOBBY	258 SQ. FT. X	0.06 CFM/SQ. FT. =	15 CFM
	5 PEOPLE. X	5 CFM/PEOPLE. =	25 CFM
CONFERENCE/PARTY ROOM	477 SQ. FT. X	0.06 CFM/SQ. FT. =	29 CFM
	30 PEOPLE. X	5 CFM/PEOPLE. =	150 CFM
STORAGE	151 SQ. FT. X	0.12 CFM/SQ. FT. =	18 CFM
VESTIBULE	188 SQ. FT. X	0.06 CFM/SQ. FT. =	11 CFM
OUTSIDE AIR REQUIRED			1468 CFM
SL/STAFF CHANGING ROOM	69 SQ. FT. X	0.25 CFM/SQ. FT. =	50 CFM
SS CHANGING ROOMS	356 SQ. FT. X	0.25 CFM/SQ. FT. =	100 CFM
RESTROOMS AREA AND DRY BAR			210 CFM
CHEMICAL / ACID ROOM			345 CFM
POOL RESTROOM	70 CFM PER FIXTURE		70 CFM
EQUIPMENT ROOM	196 SQ. FT. @ 10 ACH =		525 CFM
EXHAUST AIR REQUIRED			1300 CFM
TOTAL OUTSIDE AIR PROVIDED			1400 CFM
TOTAL EXHAUST PROVIDED			1300 CFM
AIR BALANCE			
OUTSIDE AIR THROUGH RTU-1(N)			1500 CFM
EF-1(N)			-210 CFM
EF-2(N)			-50 CFM
EF-3(N)			-70 CFM
EF-4(N)			-345 CFM
EF-5(N)			-525 CFM
EF-6(N)			-100 CFM
BUILDING PRESSURE (BAROMETRIC RELIEF)			+200 CFM

NOTE:
1. CONTRACTOR TO ADJUST MOTORIZED/MANUAL DAMPER ON FRESH AIR TAP TO PROVIDE OUTSIDE AIR AS MENTIONED IN ABOVE TABLE.

MECHANICAL UNIT SCHEDULE

UNIT TAG	DU-1(N)	RTU-1(N)
UNIT TYPE	GAS HEAT	GAS HEAT
MANUFACTURER	CAPTIVEAIRE	CAPTIVEAIRE
MODEL	CASRTU3-I.500-18-20T	CASRTU3-I.400-24-20T
STATUS	NEW	NEW
LOCATION	FLOOR	FLOOR
TOTAL CAPACITY	20.0 TONS	20.0 TONS
TOTAL COOLING MBH	264.0	241.7
TOTAL SENSIBLE MBH	96.7	167.5
IEER/ISMRE	18.2/6.0	18.2/6.0
HEATING MBH (INPUT)	493.8	275.1
HEATING MBH (OUT.)	400.0	222.8
THERMAL EFF (%)	81	81
SUPPLY AIR (CFM)	3500	6800
OUTDOOR AIR (CFM)	3500	1500
VOLTAGE/PHASE/HZ	208/3/60	208/3/60
MCA (A)	87.5	102.5
MOCP (A)	100.0	125.0
ESP (IN. OF H2O)	0.75	1.0
WEIGHT (lbs)	2790	2790
NOTES	1,2,3,4,5,6,7,8,9,10,11,13,14,15	1,2,3,4,5,6,7,8,9,10,12,13,14, 16,17,18

NOTES
1. INVERTER SCROLL COMPRESSOR WITH INTEGRATED OIL SENSOR. DIGITAL OR STAGED SCROLL NOT AN APPROVED EQUAL.
2. DIRECT DRIVE PLENUM BLOWER. BELT DRIVEN BLOWERS ARE NOT ACCEPTABLE.
3. INTEGRATED MONITORING VIA CELLULAR CONNECTION BY MANUFACTURER
4. REFRIGERATION PRESSURE MONITORING ON HIGH AND LOW PRESSURE SIDE OF SYSTEM INCLUDED THROUGH DIGITAL INTERFACE.
5. EC MOTOR CONDENSING FANS.
6. ELECTRONIC EXPANSION VALVE. TXV NOT ACCEPTABLE.
7. SUCTION LINE ACCUMULATOR.
8. FACTORY COMMISSIONING WITH 5 YEAR PARTS WARRANTY, 25 YEAR WARRANTY ON STAINLESS STEEL HEAT EXCHANGER.
9. AVERAGING INTAKE, EVAP AND DISCHARGE TEMPERATURE SENSORS (DISCHARGE SENSOR TO BE FACTORY MOUNTED WITHIN UNIT)
10. 2" EXTERIOR DUAL-WALL CONSTRUCTION W/ R-13 INSULATION-MINIMUM 20GA EXTERIOR W/ 14GA BASE.
11. 81% EFFICIENT FURNACE, WITH MODULATING INDUCER TO MAINTAIN CONSTANT COMBUSTION EFFICIENCY ACROSS FIRING RANGE. 15:1 TURNDOWN WITH NG AND 12:1 TURNDOWN WITH LP.
12. 81% EFFICIENT FURNACE, WITH MODULATING INDUCER TO MAINTAIN CONSTANT COMBUSTION EFFICIENCY ACROSS FIRING RANGE. 6:1 TURNDOWN WITH NG AND 5:1 TURNDOWN WITH LP.
13. SUPPLY CFM MONITORING INTEGRAL TO UNIT WITH CFM MEASUREMENT INCLUDED THROUGH DIGITAL INTERFACE.
14. FULLY MODULATING HOT GAS REHEAT.
15. SIDE DISCHARGE/NO RETURN.
16. RTU ECONOMIZER WITH DIFFERENTIAL ENTHALPY CONTROL.
17. SIDE DISCHARGE/SIDE RETURN.
18. PROVIDE CO2 SENSOR AND DCV CONTROLS.

FAN SCHEDULE

DESIGNATION	EF-1(N)	EF-2(N)	EF-3(N)	EF-4(N)	EF-5(N)	EF-6(N)	PEF-1(N)	PEF-2(N)
STATUS	NEW	NEW	NEW	NEW	NEW	NEW	NEW	NEW
QUANTITY	1	1	1	1	1	1	1	1
MANUFACTURER	CAPTIVEAIRE	CAPTIVEAIRE	CAPTIVEAIRE	CAPTIVEAIRE	CAPTIVEAIRE	CAPTIVEAIRE	CAPTIVEAIRE	CAPTIVEAIRE
MODEL	DU12HFA	DFA-100-CA	DU10HFA	DU12HFA	DU33HFA	DU10HFA	DU85HFA	DU85HFA
FAN TYPE	ROOF MOUNTED	IN-LINE	ROOF MOUNTED	ROOF MOUNTED	ROOF MOUNTED	ROOF MOUNTED	ROOF MOUNTED	ROOF MOUNTED
CFM	210	50	70	345	525	100	1838	1838
ESP (IN. W.G)	0.35	0.35	0.35	0.35	0.35	0.35	0.75	0.75
FLA (Amps)	2.9	1.0	1.9	2.9	4.3	1.9	11.6	11.6
WEIGHT (LBS)	55	10	50	55	70	50	130	130
V/P/Hz	115/1/60	115/1/60	115/1/60	115/1/60	115/1/60	115/1/60	115/1/60	115/1/60
NOTES	1,2,3	1,2,7	1,2,3	1,2,6	1,2,5	1,2,7	1,2,4	1,2,4

NOTES :
1. PROVIDE DISCONNECT SWITCH.
2. PROVIDE BACK DRAFT DAMPER.
3. FAN SHALL BE INTERLOCKED WITH RTU-1(N) OR PROVIDE 24 HR TIMER CONTROL. CONFIRM FINAL REQUIREMENT & INTERCONNECTION WITH OWNER.
4. FAN SHALL INTERCONNECT WITH DU-1(N) AND REFER SHEET M-13 FOR CONTROLS
5. PROVIDE TIME CONTROL SWITCH.
6. PROVIDE MANUAL SWITCH CONTROL AND FAN SHALL OPERATE 24 X 7.
7. INTERCONNECT WITH ROOM LIGHT.

DIFFUSER SCHEDULE

MANUFACTURER	TITUS	TITUS	TITUS	TITUS	TITUS	TITUS	TITUS
DESIGNATION	A	A1	B	R	R1	E	E
USE	SUPPLY	SUPPLY	SUPPLY	RETURN	RETURN	EXHAUST	EXHAUST
MODEL	TDC-AA	300 FL	TDC-AA	TDC-AA	56FL	56FL	56FL
MOUNTING	CEILING	DUCT	CEILING	CEILING	DUCT/WALL	DUCT	DUCT
LOCATION	AS SHOWN	AS SHOWN	AS SHOWN	AS SHOWN	AS SHOWN	AS SHOWN	AS SHOWN
FACE SIZE	24" X 24"	AS SHOWN	12"X12"	24" X 24"	AS SHOWN	6" X 6"	10" X 10"
NECK SIZE	REFER TABLE-A	-	REFER TABLE-A	REFER TABLE-A	-	-	-
FRAME TYPE	LAY IN	FLANGED	FLANGED	LAY IN	FLANGED	FLANGED	FLANGED
FINISH	FIELD PAINTED	FIELD PAINTED	FIELD PAINTED	FIELD PAINTED	FIELD PAINTED	FIELD PAINTED	FIELD PAINTED
NOISE CRITERIA	<30	<30	<30	<30	<30	<30	<30
ACCESSORIES	VOLUME DAMPER	VOLUME DAMPER	VOLUME DAMPER	VOLUME DAMPER	VOLUME DAMPER	VOLUME DAMPER	VOLUME DAMPER

NOTES :
1. MAX. NC LEVEL 30 OR LESS.
2. PROVIDE SQUARE TO ROUND NECK ADAPTOR.
3. SEE ARCHITECTURAL DRAWINGS FOR PAINT AND FINISH.
4. PROVIDE 4-WAY AIR THROW PATTERN UNLESS NOTED OR INDICATED.
5. CONFIRM WITH CLIENT/ARCHITECT & THEN PROVIDE INSULATED BACKS ON ALL DIFFUSERS.

ELECTRIC UNIT HEATER SCHEDULE

UNIT TAG	EUH-1(N)
STATUS	NEW
QUANTITY	1
LOCATION	AS SHOWM
MANUFACTURER	MODINE
MODEL	HER 100
KW	10
BTUS/HR	34.100
FAN DIAMETER	12"
CFM	830
MCA	27.75
VOLTAGE/PH	208/3
ACCESSORIES	THERMOSTAT
WEIGHT	70 LBS

WALL LOUVER SCHEDULE

MANUFACTURER	GREENHECK
TAG	OAL
APPLICATION	INTAKE
MODEL	ESD-635 (OR EQUIVALENT)
VOLUME (CFM)	525
PRESSURE DROP	0.07 (IN W.C.)
WIDTH (IN)	26
HEIGHT (IN)	12
DEPTH (IN)	6
FREE AREA VELOCITY (FT/MIN)	700
FREE AREA (SQ.FT.)	0.9
PRESSURE DROP ACROSS LOUVER SHALL NOT EXCEEDS THE PRESSURE DROP OF 0.1 (IN. WC)	

NECK SIZE TABLE - A

NECK SIZE DIA	CFM RANGE
Ø6"	0-100
Ø8"	101-200
Ø10"	201-400
Ø12"	401-600
Ø14"	601-900

OUTSIDE AIR DAMPER CONTROL LIMIT

MINIMUM OUTSIDE AIR REQUIRED IN THE SPACE DURING UNOCCUPIED HOURS	200 CFM
MAXIMUM OUTSIDE AIR REQUIRED IN THE SPACE DURING OCCUPIED HOURS	1500 CFM

NY ENGINEERS

PROJECT

SAFE SPLASH/SWIMLABS

REVISIONS DATES:

SR. NO.	DETAIL	DATE

MECHANICAL NOTES & SCHEDULES

M-2

CO2 SENSOR AND INSTALLATION NOTES - DEMAND CONTROL VENTILATION FOR RTU-1(N)

MODULATING OUTSIDE AIR DAMPER:
1. UNOCCUPIED MODE: REMAINS SHUT AT ALL TIMES DURING UNOCCUPIED MODE.
2. OCCUPIED MODE: ENERGIZED WHEN FAN IS RUNNING, CLOSED WHEN FAN IS NOT RUNNING. DAMPER SHALL MODULATE BASED ON SIGNAL FROM CO2 SENSORS TO MAINTAIN LEVEL AT OR BELOW 600 PPM ABOVE AMBIENT LEVEL. THE AMBIENT LEVEL CAN BE ASSUMED TO BE 400 PPM. RECOMMENDED LEVEL IS 400 PPM.
3. COMMERCIAL SENSOR UTILIZES A SIGNAL BEAM ABSORPTION INFRARED DIFFUSION SAMPLE METHOD FOR CO2 DETECTION. USING CO2 AS AN INDICATOR OF OCCUPANCY WILL ALLOW VENTILATION BASED ON ACTUAL OCCUPANCY WHILE MAINTAINING CODE MINIMUM VENTILATION.
4. SENSOR WILL MODULE OUTSIDE AIR QUANTITIES THROUGH ECONOMIZER DAMPER ACTUATOR AND WILL CONTROL AMOUNT BETWEEN 200 CFM AND 1500 CFM OF OUTSIDE AIR.
5. SENSOR SHALL BE PROVIDED WITH ROOFTOP AIR CONDITIONING UNIT AND INSTALL PER MANUFACTURERS REQUIREMENTS.
6. CO2 SENSORS SHALL BE LOCATED WITHIN THE BREATHING ZONE BETWEEN 3' TO 6' ABOVE FINISHED FLOOR.

DU-1(N)
20.0 TON
WEIGHT: 2660 LBS

RTU-1(N)
20.0 TON
WEIGHT: 2660 LBS

CONTRACTOR TO MAINTAIN MIN OF 54" OFF STRAIGHT DUCT BEFORE MAKING A ELBOW.

DUCTWORK TO RUN DOWN AND CONNECT TO THE RTU

36"X12"(N)

40"X16"(N)

32"X16"(N)

6"X6" DOOR GRILLE

Ø10" EXHAUST DUCT UP TO ROOF AND CONNECTED TO EF-4(N)

Ø14" EXHAUST DUCT UP TO ROOF AND CONNECTED TO EF-5(N)

COORDINATE WITH POOL CONTRACTOR FOR VENTS FOR GAS POOL WATER HEATERS

USE GALVANIZED DUCT PAINTED WITH CORROSION RESISTANT PAINT E-BOND EPOXY OR EQUAL FOR EQP. ROOM EXHAUST

CHEMICAL STORAGE

POOL EQUIPMENT ROOM

EUH-1(N)

MAINTAIN MINIMUM 12" CLEARANCE FROM TOP AND SIDE. INSTALL AT 8' A.F.F

M. DAMPER TO OPEN WHEN EF-5(N) IS OPERATING

22"X12" DUCT TO BOTTOM

18"X36" EXHAUST AIR GRILLE SHALL BE DOUBLE DEFLECTION TYPE

STORAGE

POOL RESTROOM

Ø6" EXHAUST DUCT UP TO ROOF AND CONNECTED TO EF-3(N)

SWIMLABS

INSULATION NOTES:
1. ALL EXPOSED DUCT SHOULD HAVE INTERNAL INSULATION.
2. ALL CONCEALED DUCTS SHALL HAVE EXTERNAL INSULATION.

ALL FABRIC DUCT SHALL BE CONSTRUCTED WITH CLASS 0 OR CLASS 1 DUCT MATERIAL AND SHALL COMPLY WITH UL 2518. CONTRACTOR TO VERIFY AND CONFIRM THE SAME BEFORE BIDDING.

NOTE:
1. FOR FABRIC DUCTWORK CONTRACTOR MUST OBTAIN SHOP DRAWINGS FOR INSTALLATION FROM MANUFACTURER.
2. GC AND MECHANICAL CONTRACTOR TO COORDINATE WITH FIRE ALARM CONTRACTOR FOR PLACEMENT OF CARBON MONOXIDE DETECTORS IN THE POOL AREA TO SHUT DOW N DOAS IF CO DETECTED.
3. CONTRACTOR MUST FIELD INSTALL FACTORY SUPPLIED DISCHARGE AIR SENSOR AT LEAST 6' INTO THE SUPPLY DUCT.
4. HMI TO BE INSTALLED IN THE MANAGER'S OFFICE. TEMPERATURE/HUMIDITY SENSOR TO BE INSTALLED INSIDE THE POOL ROOM.

SAFE SPLASH IN-GROUND POOL

EXHAUST DUCT FROM POOL EXHAUST FAN

22"X12" RECTANGULAR DUCT

18"X36" EXHAUST AIR GRILLE SHALL BE DOUBLE DEFLECTION TYPE

EXHAUST AIR GRILLE SHALL BE INSTALLED 8" FROM A.F.F.

A.F.F.

EXHAUST AIR GRILLE ARRANGEMENT FOR PEF-1(N) & PEF-2(N)

SAFE SPLASH SHOWERS

MOP CLOSET

SS CHANGING ROOMS

RESTROOMS AREA

MENS RESTROOM

WOMENS RESTROOM

ADJACENT TENANT SPACE N.I.C.

INSULATION NOTES:
1. ALL EXPOSED DUCT SHALL HAVE INTERNAL INSULATION.
2. ALL CONCEALED DUCTS SHALL HAVE EXTERNAL INSULATION.

ALL ELBOWS/TURNS ARE RADIUS THROAT, RADIUS BACK, SHALL INCLUDE TURNING VANES.

ALL FABRIC DUCT SHALL BE CONSTRUCTED WITH CLASS 0 OR CLASS 1 DUCT MATERIAL AND SHALL COMPLY WITH UL 2518. CONTRACTOR TO VERIFY AND CONFIRM THE SAME BEFORE BIDDING.

VIEWING AREA

Ø4" DRYER VENT UP TO ROOF. CONTRACTOR TO FIELD VERIFY AND COORDINATE FOR THE EXACT LOCATION FOR THE VENT

FOR RTU-1(N)

TEMP. SENSOR FOR RTU-1(N) CONFIRM FINAL LOCATION / REQUIREMENT WITH ARCHITECT / OWNER

T-STAT & H-STAT FOR RTU-1(N) CONFIRM FINAL LOCATION / REQUIREMENT WITH ARCHITECT / OWNER

SL/STAFF CHANGING ROOM

STAFF ROOM

OFFICE

IT CLOSET

CONFERENCE/ PARTY ROOM

RECEPTION/ LOBBY

VESTIBULE

EF-2(N)

8"X8" EXHAUST TERMINATE WITH VENT CAP.

WASHING MACHINE/DRYER (BY OTHERS). THE EQUIPMENT SHALL BE PLACED AT LEAST 6" FROM THE WALL FOR DRYER VENTING. CONTRACTOR TO FIELD VERIFY THE SAME

12"Ø(N) FABRIC DUCT 860 CFM

14"Ø(N) FABRIC DUCT 1290 CFM

16"Ø(N) FABRIC DUCT 1720 CFM

16"Ø(N) FABRIC DUCT 1730 CFM

8"Ø(N) FABRIC DUCT 430 CFM

12"Ø(N) FABRIC DUCT 870 CFM

14"Ø(N) FABRIC DUCT 1300 CFM

18"Ø(N) FABRIC DUCT 2250 CFM

22"Ø(N) FABRIC DUCT 3450 CFM

26"Ø(N) FABRIC DUCT 4850 CFM

8"Ø(N) FABRIC DUCT 440 CFM

PROJECT

SAFE SPLASH/SWIMLABS

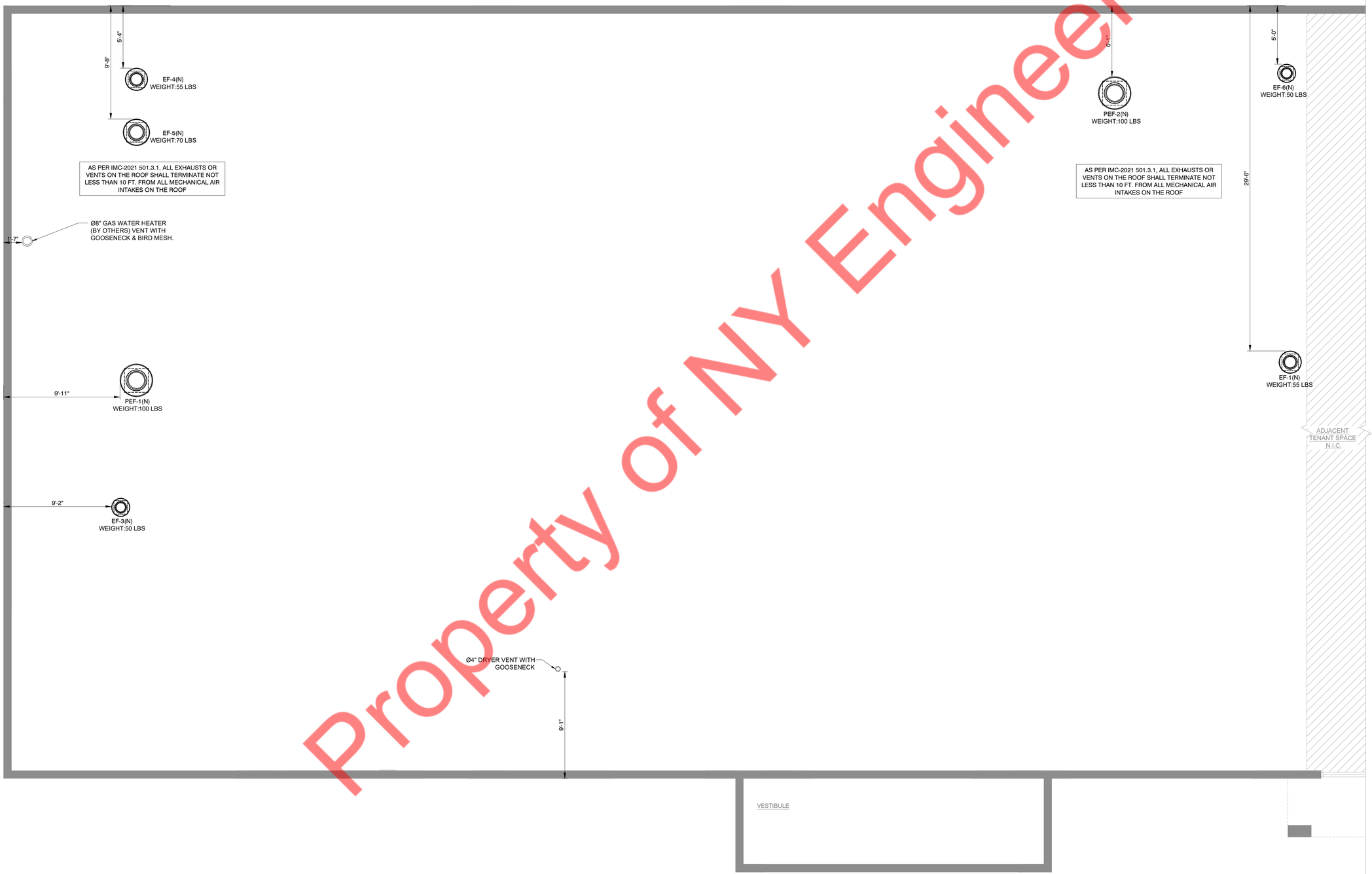
REVISIONS DATES:

SR. NO.	DETAIL	DATE

HVAC FLOOR PLAN

M-3

HVAC FLOOR PLAN | SCALE 1/4" = 1'-0" | 1



HVAC ROOF PLAN | SCALE 1/4" = 1'-0" | 1

NY ENGINEERS

PROJECT

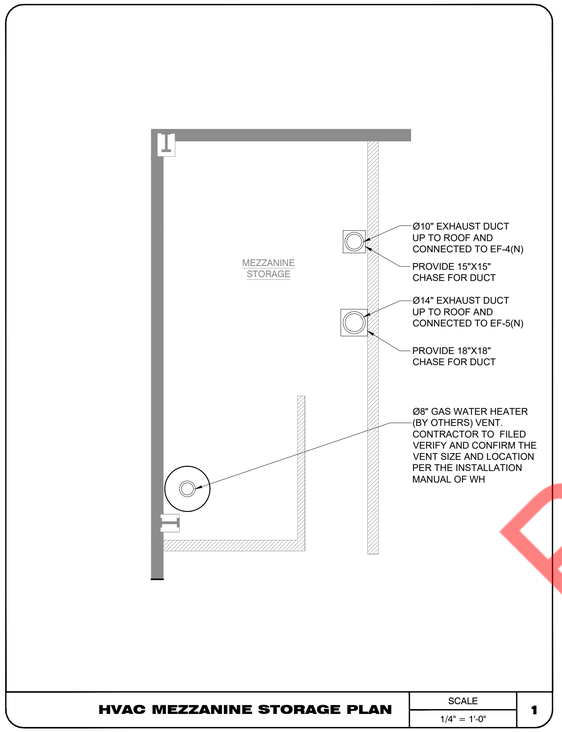
SAFE SPLASH/SWIMLABS

REVISIONS DATES:

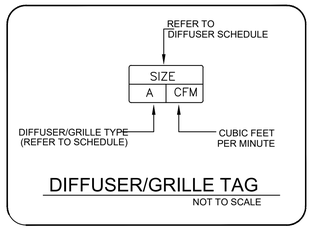
SR. NO.	DETAIL	DATE

HVAC ROOF PLAN

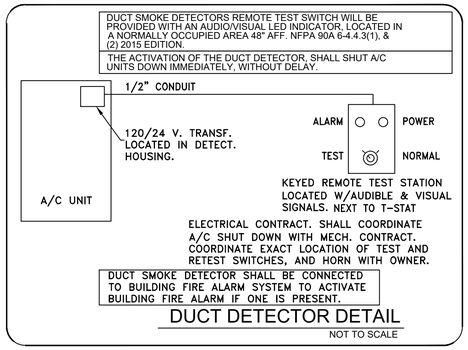
M-4



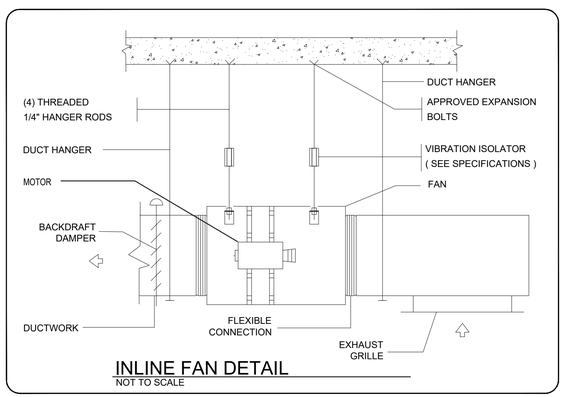
HVAC MEZZANINE STORAGE PLAN | SCALE 1/4" = 1'-0" | 1



DIFFUSER/GRILLE TAG
NOT TO SCALE



DUCT DETECTOR DETAIL
NOT TO SCALE



INLINE FAN DETAIL
NOT TO SCALE

NY ENGINEERS

PROJECT

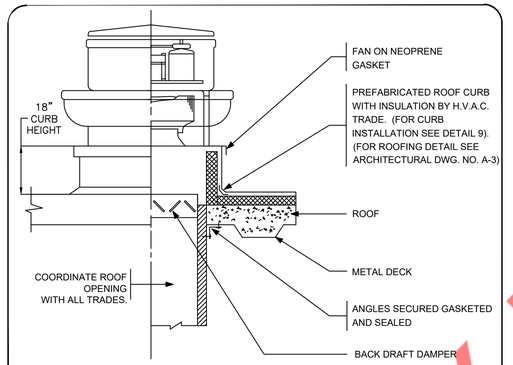
SAFE SPLASH/SWIMLABS

REVISIONS DATES:

SR. NO.	DETAIL	DATE

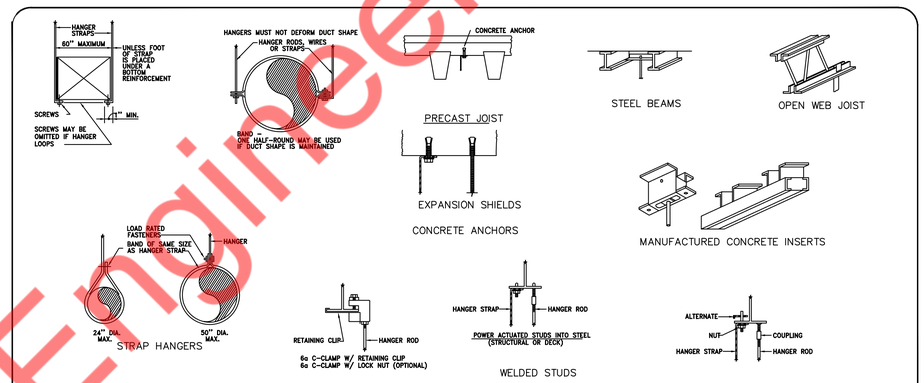
HVAC MEZZANINE STORAGE PLAN & MECHANICAL DETAILS

M-5



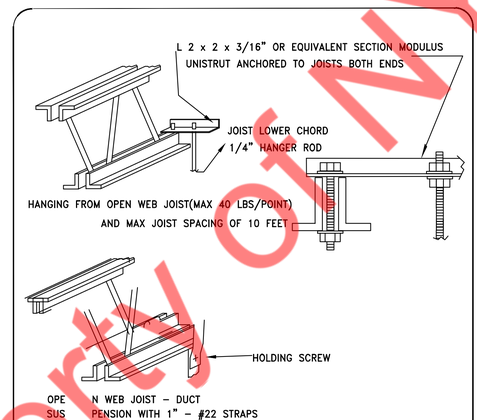
UP BLAST EXHAUST FAN DETAIL

NOT TO SCALE



UPPER & LOWER ATTACHMENTS & DEVICES

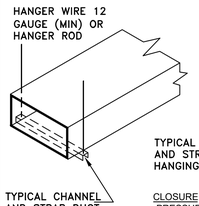
NOT TO SCALE

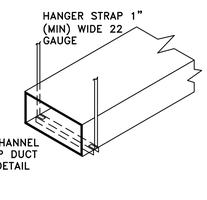


DUCT MOUNTING DETAIL

NOT TO SCALE

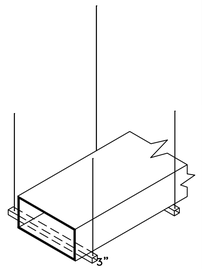
CHANNEL SELECTION		
DUCT WIDTH MIN.	CHANNEL GUAGE MIN.	CHANNEL PROFILE
LESS THAN 18"	22 3"x 2"	
LESS THAN 30"	18 3"x 2"	





CLOSURE:
-PRESSURE SENSITIVE ALUMINUM FOIL TAPES LSITED UNDER UL 181A, PART I (P)
- HEAT ACTIVATED ALUMINUM FOIL/SCRIM TAPES LISTED UNDER UL 181A, PART II (H)
- MASTIC AND GLASS FABRIC TAPE CLOSURE SYSTEMS LISTED UNDER UL 181A, PART III (M)

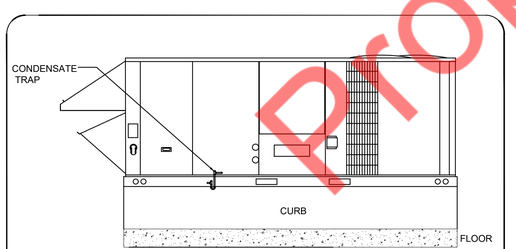
DUCT SIZE,IN.	MAXIMUM HANGER SPACING
① WIDTH 48" OR GREATER	4'–0"
② LESS THEN 48"W X 12"H	6'–0"
③ WIDTH BETWEEN 24" & 48" & HEIGHT OVER 24"	6'–0"
④ WIDTH BETWEEN 24" & 48" & HEIGHT BETWEEN 12" & 24"	8'–0"
⑤ WIDTH LESS THAN 24" & HEIGHT GREATER THAN 12"	8'–0"
DUCT REINFORCING PER SMACNA REQUIRED	



HANGER SPACING AND EXTENSION 3" WIDE CHANNELS

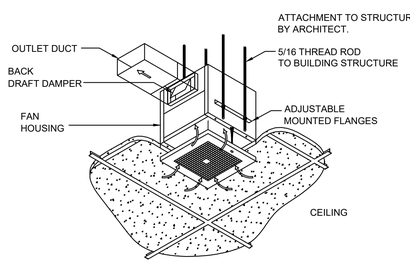
DUCT SUPPORTS

NOT TO SCALE



FLOOR MOUNTED UNIT SUPPORT

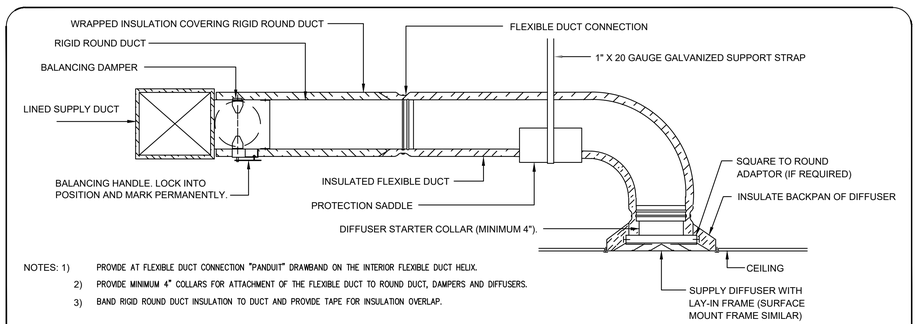
NOT TO SCALE



RIGHT ANGLE DISCHARGE

CEILING EXHAUST FAN DETAIL

NOT TO SCALE



NOTES: 1) PROVIDE AT FLEXIBLE DUCT CONNECTION "PANDUIT" DRAWBAND ON THE INTERIOR FLEXIBLE DUCT HELIX.
2) PROVIDE MINIMUM 4" COLLARS FOR ATTACHMENT OF THE FLEXIBLE DUCT TO ROUND DUCT, DAMPERS AND DIFFUSERS.
3) BAND RIGID ROUND DUCT INSULATION TO DUCT AND PROVIDE TAPE FOR INSULATION OVERLAP.

DIFFUSER CONNECTION DETAIL-FLEX DUCT

NOT TO SCALE

NY ENGINEERS

PROJECT

SAFE SPLASH/SWIMLABS

REVISIONS DATES:

SR. NO.	DETAIL	DATE

MECHANICAL DETAILS

M-6

Bennett
Mechanical Systems

ATTENTION ALL BIDDING CONTRACTORS:

For All CaptiveAire Inquiries, Pricing, and Order Placement Contact SafeSplash's National Account Manager Justin Bennett at Justin@BennettMS.com

EXHAUST FAN INFORMATION – JOB#6057566

FAN UNIT NO	TAG	QTY	FAN UNIT MODEL #	MANUFACTURER	CFM	ESP	RPM	MOTOR ENCL	HP	BHP	PHASE	VOLT	FLA	DISCHARGE VELOCITY	WEIGHT (LBS)	SONES
3	PEF-1	1	DUB9HFA	CAPTIVEAIRE	1838	0.750	1365	TEAO-ECM	1.000	0.5020	1	115	11.6	582 FPM	93	12
4	PEF-2	1	DUB9HFA	CAPTIVEAIRE	1838	0.750	1365	TEAO-ECM	1.000	0.5020	1	115	11.6	582 FPM	93	12
5	EF-1	1	DU12HFA	CAPTIVEAIRE	210	0.350	1250	TEAO-ECM	0.250	0.0520	1	115	2.9	149 FPM	55	5.1
6	EF-2	1	IFA-100-CA	CAPTIVEAIRE	50	0.350	1852	GENERALPURPOSE	0.150	0.0360	1	115	1.0		9	N/A
7	EF-3	1	DU10HFA	CAPTIVEAIRE	70	0.350	1148	TEAO-ECM	0.166	0.0090	1	115	1.9	146 FPM	50	3.5
8	EF-4	1	DU12HFA	CAPTIVEAIRE	345	0.350	1456	TEAO-ECM	0.250	0.0890	1	115	2.9	245 FPM	55	7.7
9	EF-5	1	DU33HFA	CAPTIVEAIRE	525	0.350	1108	TEAO-ECM	0.333	0.0920	1	115	4.3	260 FPM	68	8.6
10	EF-6	1	DU10HFA	CAPTIVEAIRE	100	0.350	1176	TEAO-ECM	0.166	0.0120	1	115	1.9	208 FPM	50	3.7

DOAS/RTU FAN SCHEDULE – JOB#6057566

FAN UNIT NO	TAG	QTY	DOAS/RTU MODEL #	MANUFACTURER	BLOWER	RETURN AIR CFM	MAX OUTSIDE AIR CFM	TOTAL CFM	WEIGHT (LBS)	ESP	HP	PHASE	VOLT	MCA	MOCP	COOLING OUTSIDE AIR DB	COOLING OUTSIDE AIR WB	COOLING MIXED AIR DB	COOLING MIXED AIR WB	COOLING LEAVING AIR DB	COOLING LEAVING AIR WB	COOLING LEAVING AIR DP	COOLING CAPACITY TOTAL	COOLING CAPACITY SENS.	IEER	ISMRE	REHEAT DISCHARGE DB	REHEAT DISCHARGE WB	REHEAT CAPACITY DESIRED	REHEAT CAPACITY MAX	MOISTURE REMOVAL RATE	GAS HEAT INFORMATION GAS TYPE	INPUT BTUs	OUTPUT BTUs	TEMP RISE	REQUIRED INPUT GAS PRESSURE	NOTES
1	DU-1	1	CASRTU3-1500-18-20T	CAPTIVEAIRE	18P-3	0	3500	3500	2652	0.750	5.00	3	208	87.5A	100A	81.3°F	76.4°F	---	---	55.6°F	53.8°F	52.6°F	264.0 MBH	96.7 MBH	18.2	6.0	88.0°F	65.7°F	126.5 MBH	129.6 MBH	150.9 LBS/HR	NATURAL	493827	400000	95°F	7 IN. W.C. - 14 IN. W.C.	1,2,3,4,5,6,7,8,9,10,11,13,14,15
2	RTU-1	1	CASRTU3-1400-24-20T	CAPTIVEAIRE	24MF-3-RTU	5300	1500	6800	2706	1.000	10.00	3	208	102.5A	125A	81.3°F	76.4°F	76.4°F	65.6°F	53.5°F	53.5°F	53.6°F	241.7 MBH	167.5 MBH	18.2	6.0	70.0°F	60.0°F	125.7 MBH	129.6 MBH	68.3 LBS/HR	NATURAL	275165	222884	30°F	7 IN. W.C. - 14 IN. W.C.	1,2,3,4,5,6,7,8,9,10,12,13,14,16,17

NOTES:
1. INVERTER SCROLL COMPRESSOR WITH INTEGRATED OIL SENSOR. DIGITAL OR STAGED SCROLL NOT AN APPROVED EQUAL
2. DIRECT DRIVE PLENUM BLOWER. BELT DRIVEN BLOWERS ARE NOT ACCEPTABLE
3. INTEGRATED MONITORING VIA CELLULAR CONNECTION BY MANUFACTURER
4. REFRIGERATION PRESSURE MONITORING ON HIGH AND LOW PRESSURE SIDE OF SYSTEM INCLUDED THROUGH DIGITAL INTERFACE
5. EC MOTOR CONDENSING FANS
6. ELECTRONIC EXPANSION VALVE. TXV NOT ACCEPTABLE
7. SUCTION LINE ACCUMULATOR
8. FACTORY COMMISSIONING WITH 5 YEAR PARTS WARRANTY, 25 YEAR WARRANTY ON STAINLESS STEEL HEAT EXCHANGER
9. AVERAGING INTAKE, EVAP AND DISCHARGE TEMPERATURE SENSORS (DISCHARGE SENSOR TO BE FACTORY MOUNTED WITHIN UNIT)
10. 2" EXTERIOR DUAL-WALL CONSTRUCTION W/ R-13 INSULATION-MINIMUM 20GA EXTERIOR W/ 14GA BASE
11. 81% EFFICIENT FURNACE, WITH MODULATING INDUCER TO MAINTAIN CONSTANT COMBUSTION EFFICIENCY ACROSS FIRING RANGE. 15:1 TURNDOWN WITH NG AND 12:1 TURNDOWN WITH LP
12. 81% EFFICIENT FURNACE, WITH MODULATING INDUCER TO MAINTAIN CONSTANT COMBUSTION EFFICIENCY ACROSS FIRING RANGE. 6:1 TURNDOWN WITH NG AND 5:1 TURNDOWN WITH LP
13. SUPPLY CFM MONITORING INTEGRAL TO UNIT WITH CFM MEASUREMENT INCLUDED THROUGH DIGITAL INTERFACE
14. FULLY MODULATING HOT GAS REHEAT
15. SIDE DISCHARGE/NO RETURN
16. RTU ECONOMIZER WITH DIFFERENTIAL ENTHALPY CONTROL
17. SIDE DISCHARGE/SIDE RETURN

FAN OPTIONS

FAN UNIT NO	TAG	QTY	DESCRIPTION
1	DU-1	1	INLET PRESSURE GAUGE, 0-35"
		1	RTU TOTAL CFM MONITORING
		1	SHIP LOOSE GAS STRAINER 1"
		1	SINGLE POINT ELECTRICAL CONNECTION FOR RTU. 750VA TRANSFORMER USED. IF A NON-DCV PREWIRE CONTROLS THIS UNIT, THE #28, #47, "MA", OR "E2" PREWIRE OPTION MUST BE SELECTED. DOES NOT PROVIDE SUPPLY STARTER IN PREWIRE
		1	CASLINK BUILDING MONITORING SYSTEM - INTERNET OR CELLULAR CONNECTION REQUIRED
		1	2" MERV 13 FILTERS FOR RTU3 (QTY. 4)
		1	2" MERV 8 FILTERS FOR RTU3 (QTY. 4)
		1	VFD FACTORY MOUNTED AND WIRED IN RTU COMMERCIAL CONTROL VESTIBULE
		1	20 TON MODULATING COOLING OPTION, 208/230V. R410A REFRIGERANT, VARIABLE SPEED COMPRESSOR, ECM CONDENSING FANS
		1	20 TON MODULATING REHEAT OPTION - SPACE DEWPOINT CONTROL
		1	RTU FIXED 100% OA INTAKE CONTROL
		1	RTU3 NO RETURN - 100% OA
		1	REMOTE TEMPERATURE AND HUMIDITY SPACE SENSOR
		1	RTU3 SIDE DISCHARGE
		1	COMMERCIAL SMOKE DETECTOR/ALARM INTERLOCK - ALARM SUPPLIED BY OTHERS
		1	HIGH TURNDOWN OPTION FOR DOAS UNITS
		1	MANIFOLD PRESSURE GAUGE, 0 TO 10" WC, 2 FURNACES
		1	AUXILIARY REHEAT
		1	FREEZESTAT
		1	EXHAUST CONTACTOR AFTER AIRFLOW SWITCH - FIELD WIRED
		1	CLOGGED FILTER SWITCH - NOTIFICATION ON HMI
		1	RTU3 CONVENIENCE OUTLET (GFCI), 15 AMP - REQUIRES SEPARATE 120V CONNECTION. INCLUDES RECEPTACLE, COVER AND J-BOX
		1	VAV PACKAGE W/ MANUAL/BDC CONTROL (S71 VFD INCLUDED)
		1	CURRENT SENSOR MOUNTED IN EXHAUST FAN FOR USE WITH POOL ROOM TEMP CONTROL
		1	RTU3 CURB DUCT HANGER
		1	5 YEAR ENTIRE UNIT PARTS WARRANTY, 10 YEAR ENTIRE UNIT PARTS WARRANTY WITH REMOTE MONITORING AND CAPTIVEAIRE SERVICE CONTRACT, 25 YEAR STAINLESS STEEL FURNACE PARTS WARRANTY (SEE ADDITIONAL DETAILS)
2	RTU-1	1	INLET PRESSURE GAUGE, 0-35"
		1	MANIFOLD PRESSURE GAUGE, 0 TO 10" WC, 1 FURNACE
		1	RTU TOTAL CFM MONITORING
		1	SHIP LOOSE GAS STRAINER 1"
		1	SINGLE POINT ELECTRICAL CONNECTION FOR RTU. 750VA TRANSFORMER USED. IF A NON-DCV PREWIRE CONTROLS THIS UNIT, THE #28, #47, "MA", OR "E2" PREWIRE OPTION MUST BE SELECTED. DOES NOT PROVIDE SUPPLY STARTER IN PREWIRE
		1	CASLINK BUILDING MONITORING SYSTEM - INTERNET OR CELLULAR CONNECTION REQUIRED
		1	2" MERV 8 FILTERS FOR RTU2 (QTY. 4)
		1	OVERHEAT STAT
		1	VFD FACTORY MOUNTED AND WIRED IN RTU COMMERCIAL CONTROL VESTIBULE
		1	20 TON MODULATING COOLING OPTION, 208/230V. R410A REFRIGERANT, VARIABLE SPEED COMPRESSOR, ECM CONDENSING FANS
		1	20 TON MODULATING REHEAT OPTION - SPACE DEWPOINT CONTROL
		1	REMOTE TEMPERATURE AND HUMIDITY SPACE SENSOR
		1	RTU3 CURB DUCT HANGER
		1	COMMERCIAL SMOKE DETECTOR/ALARM INTERLOCK - ALARM SUPPLIED BY OTHERS
		1	EXHAUST CONTACTOR AFTER AIRFLOW SWITCH - FIELD WIRED
		1	OCCUPIED SCHEDULING
		1	CLOGGED FILTER SWITCH - NOTIFICATION ON HMI
3	PEF-1	1	RTU3 CONVENIENCE OUTLET (GFCI), 15 AMP - REQUIRES SEPARATE 120V CONNECTION. INCLUDES RECEPTACLE, COVER AND J-BOX
		1	RTU INTAKE/RETURN DAMPER - MANUAL CONTROL VIA HMI
		1	RTU3 SIDE RETURN
		1	BLOWER CONTROL - CO2 MIN/MAX OVERRIDE SETPOINT
		1	VAV PACKAGE W/ MANUAL/BDC CONTROL (S71 VFD INCLUDED)
		1	RTU ECONOMIZER - DIFFERENTIAL ENTHALPY CONTROL
		1	RTU3 SIDE DISCHARGE
		1	5 YEAR ENTIRE UNIT PARTS WARRANTY, 0 YEAR ENTIRE UNIT PARTS WARRANTY WITH REMOTE MONITORING AND CAPTIVEAIRE SERVICE CONTRACT, 25 YEAR STAINLESS STEEL FURNACE PARTS WARRANTY (SEE ADDITIONAL DETAILS)
		1	ECM WIRING PACKAGE - EXHAUST - MANUAL OR 0-10VDC REFERENCE SPEED CONTROL -MSC-(TELCO), CCW ROTATION
		1	SCR-15 BIRD SCREEN
		1	1 19-BDD DAMPER
		1	MSC TO BE SET UP FOR CONTROL TYPE: 0-10V - TELCO -
		1	CURRENT SENSOR MOUNTED IN EXHAUST FAN FOR USE WITH POOL ROOM TEMP CONTROL
		1	2 YEAR PARTS WARRANTY
4	PEF-2	1	ECM WIRING PACKAGE - EXHAUST - MANUAL OR 0-10VDC REFERENCE SPEED CONTROL -MSC-(TELCO), CCW ROTATION
		1	SCR-15 BIRD SCREEN
		1	1 19-BDD DAMPER
		1	MSC TO BE SET UP FOR CONTROL TYPE: 0-10V - TELCO -
		1	CURRENT SENSOR MOUNTED IN EXHAUST FAN FOR USE WITH POOL ROOM TEMP CONTROL
		1	2 YEAR PARTS WARRANTY
5	EF-1	1	ECM WIRING PACKAGE - EXHAUST - MANUAL OR 0-10VDC REFERENCE SPEED CONTROL -MSC-(TELCO), CCW ROTATION
		1	SCR-12 BIRD SCREEN
		1	1 12-BDD DAMPER
		1	2 YEAR PARTS WARRANTY
6	EF-2	1	FAN CONTROL - 3 AMP WHITE SPEED CONTROL FOR CFA CEILING FAN
		1	2 YEAR PARTS WARRANTY
7	EF-3	1	ECM WIRING PACKAGE - EXHAUST - MANUAL OR 0-10VDC REFERENCE SPEED CONTROL -MSC-(TELCO), CCW ROTATION
		1	SCR-10 BIRD SCREEN
		1	1 12-BDD DAMPER
		1	2 YEAR PARTS WARRANTY
8	EF-4	1	ECM WIRING PACKAGE - EXHAUST - MANUAL OR 0-10VDC REFERENCE SPEED CONTROL -MSC-(TELCO), CCW ROTATION
		1	SCR-12 BIRD SCREEN
		1	1 12-BDD DAMPER
		1	2 YEAR PARTS WARRANTY
9	EF-5	1	ECM WIRING PACKAGE - EXHAUST - MANUAL OR 0-10VDC REFERENCE SPEED CONTROL -MSC-(TELCO), CCW ROTATION
		1	SCR-11 BIRD SCREEN
		1	1 15-BDD DAMPER
		1	2 YEAR PARTS WARRANTY
10	EF-6	1	ECM WIRING PACKAGE - EXHAUST - MANUAL OR 0-10VDC REFERENCE SPEED CONTROL -MSC-(TELCO), CCW ROTATION
		1	SCR-10 BIRD SCREEN
		1	1 12-BDD DAMPER
		1	2 YEAR PARTS WARRANTY

FAN ACCESSORIES

FAN UNIT NO	TAG	EXHAUST GREASE CUP	EXHAUST GRAVITY DAMPER	EXHAUST WALL MOUNT	SUPPLY SIDE DISCHARGE	SUPPLY GRAVITY DAMPER	SUPPLY MOTORIZED DAMPER	SUPPLY WALL MOUNT
3	PEF-1		YES					
4	PEF-2		YES					
5	EF-1		YES					
6	EF-2							
7	EF-3		YES					
8	EF-4		YES					
9	EF-5		YES					
10	EF-6		YES					

CURB ASSEMBLIES

NO	ON FAN	TAG	WEIGHT	ITEM	SIZE
1	# 1	DU-1	130 LBS	CURB	59.500"W X 91.000"L X 20.000"H INSULATED.
2	# 2	RTU-1	130 LBS	CURB	59.500"W X 91.000"L X 20.000"H INSULATED.
3	# 3	PEF-1	40 LBS	CURB	23.000"W X 23.000"L X 26.000"H INSULATED HINGED.
4	# 4	PEF-2	40 LBS	CURB	23.000"W X 23.000"L X 26.000"H INSULATED HINGED.
5	# 5	EF-1	31 LBS	CURB	17.500"W X 17.500"L X 26.000"H INSULATED.
7	# 7	EF-3	31 LBS	CURB	17.500"W X 17.500"L X 26.000"H INSULATED HINGED.
8	# 8	EF-4	31 LBS	CURB	17.500"W X 17.500"L X 26.000"H INSULATED HINGED.
9	# 9	EF-5	34 LBS	CURB	19.500"W X 19.500"L X 26.000"H INSULATED HINGED.
10	# 10	EF-6	31 LBS	CURB	17.500"W X 17.500"L X 26.000"H INSULATED.

SYSTEM DESIGN VERIFICATION (SDV)

IF ORDERED, CAS SERVICE WILL PERFORM A SYSTEM DESIGN VERIFICATION (SDV) ONCE ALL EQUIPMENT HAS HAD A COMPLETE START UP PER THE OPERATION AND INSTALLATION MANUAL. TYPICALLY, THE SDV WILL BE PERFORMED AFTER ALL INSPECTIONS ARE COMPLETE.

ANY FIELD RELATED DISCREPANCIES THAT ARE DISCOVERED DURING THE SDV WILL BE BROUGHT TO THE ATTENTION OF THE GENERAL CONTRACTOR AND CORRESPONDING TRADES ON SITE. THESE ISSUES WILL BE DOCUMENTED AND FORWARDED TO THE APPROPRIATE SALES OFFICE. IF CAS SERVICE HAS TO RESOLVE A DISCREPANCY THAT IS A FIELD ISSUE, THE GENERAL CONTRACTOR WILL BE NOTIFIED AND BILLED FOR THE WORK. SHOULD A RETURN TRIP BE REQUIRED DUE TO ANY FIELD RELATED DISCREPANCY THAT CANNOT BE RESOLVED DURING THE SDV, THERE WILL BE ADDITIONAL TRIP CHARGES.

DURING THE SDV, CAS SERVICE WILL ADDRESS ANY DISCREPANCY THAT IS THE FAULT OF THE MANUFACTURER. SHOULD A RETURN TRIP BE REQUIRED, THE GENERAL CONTRACTOR AND APPROPRIATE SALES OFFICE WILL BE NOTIFIED. THERE WILL BE NO ADDITIONAL CHARGES FOR MANUFACTURER DISCREPANCIES.

REVISIONS

	DESCRIPTION	DATE:
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www.captiveaire.com

DATE: 6/14/2023

DWG.#: 6057566

DRAWN BY: BDP

SCALE: 1/2" = 1'-0"

MASTER DRAWING

SHEET NO. 1

NY ENGINEERS

PROJECT

SAFE SPLASH/SWIMLABS

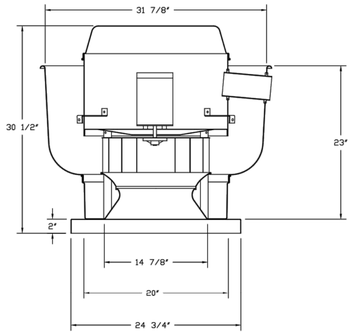
REVISIONS DATES:

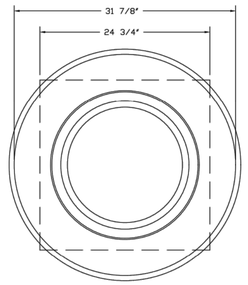
SR. NO.	DETAIL	DATE

DOAS SCHEDULE AND NOTES

M-7

FANS #3 (PEF-1), #4 (PEF-2) - DUBSHFA EXHAUST FAN





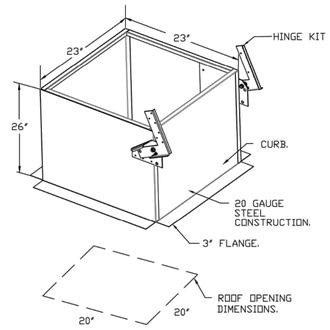
TOP VIEW

FEATURES:

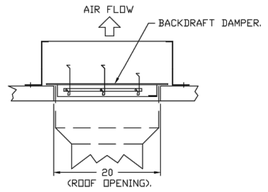
- DIRECT DRIVE CONSTRUCTION (NO BELTS/PULLEYS).
- ROOF MOUNTED FANS.
- UL705.
- VARIABLE SPEED CONTROL.
- INTERNAL WIRING.
- THERMAL OVERLOAD PROTECTION (SINGLE PHASE).
- NEMA 3R SAFETY DISCONNECT SWITCH.

OPTIONS

- ECM WIRING PACKAGE - EXHAUST - MANUAL OR 0-10VDC REFERENCE SPEED CONTROL -MSC- (TELCD), CCW ROTATION.
- SCR-15 BIRD SCREEN.
- I 19-B0D DAMPER.
- MSC TO BE SET UP FOR CONTROL TYPE 0-10V - TELCD -.
- CURRENT SENSOR MOUNTED IN EXHAUST FAN FOR USE WITH POOL ROOM TEMP CONTROL.
- 2 YEAR PARTS WARRANTY.

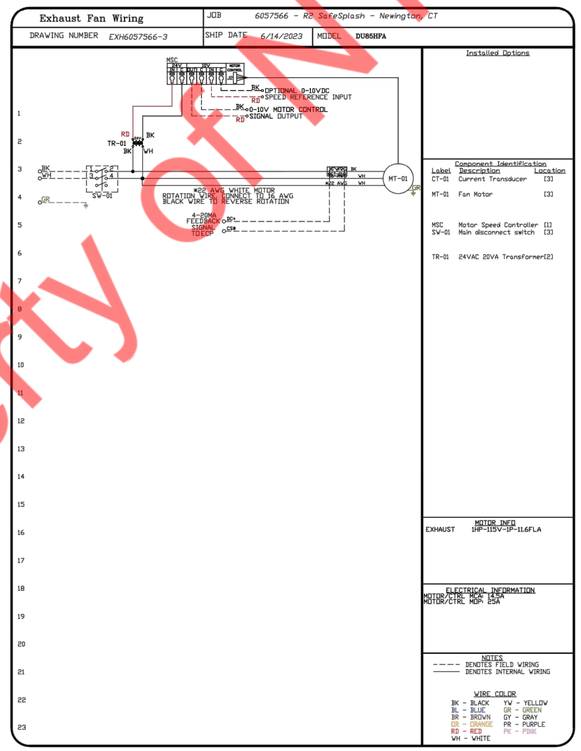


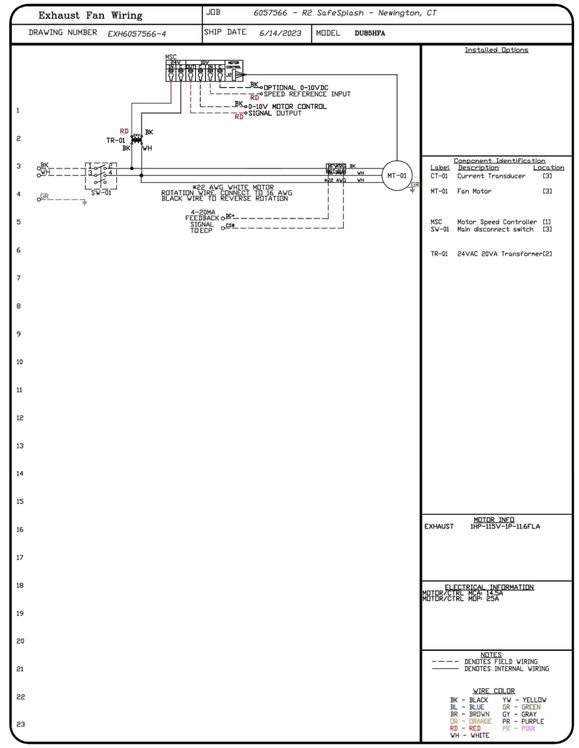
BACKDRAFT DAMPER INSTALLATION



ATTENTION ALL BIDDING CONTRACTORS:

For All CaptiveAire Inquiries, Pricing, and Order Placement Contact SafeSplash's National Account Manager Justin Bennett at Justin@BennettMS.com





REVISIONS

	DESCRIPTION	DATE:
1		
2		
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DATE: 6/14/2023

DWG.#: 6057566

DRAWN BY: BDP

SCALE: 3/4" = 1'-0"

MASTER DRAWING

SHEET NO. 2

NY ENGINEERS

PROJECT

SAFE SPLASH/SWIMLABS

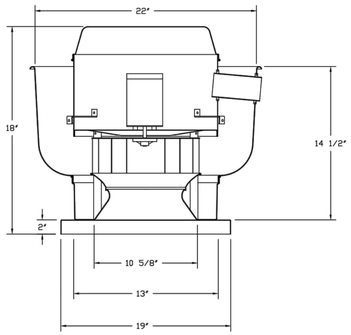
REVISIONS DATES:

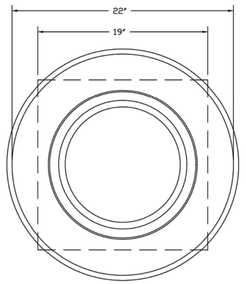
SR. NO.	DETAIL	DATE

DOAS SCHEDULE AND NOTES

M-8

FAN #5 DU12HFA - EXHAUST FAN (EF-1)





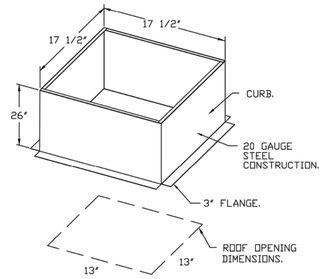
TOP VIEW

FEATURES:

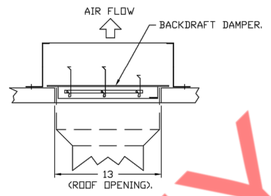
- DIRECT DRIVE CONSTRUCTION (NO BELTS/PULLEYS).
- ROOF MOUNTED FANS.
- UL705.
- VARIABLE SPEED CONTROL.
- INTERNAL WIRING.
- THERMAL OVERLOAD PROTECTION (SINGLE PHASE).
- NEMA 3R SAFETY DISCONNECT SWITCH.

OPTIONS

- ECM WIRING PACKAGE - EXHAUST - MANUAL OR 0-10VDC REFERENCE SPEED CONTROL -MSC- (TELCO), CCW ROTATION.
- SCR-12 BIRD SCREEN.
- 1 12-RDD DAMPER.
- 2 YEAR PARTS WARRANTY.



BACKDRAFT DAMPER INSTALLATION



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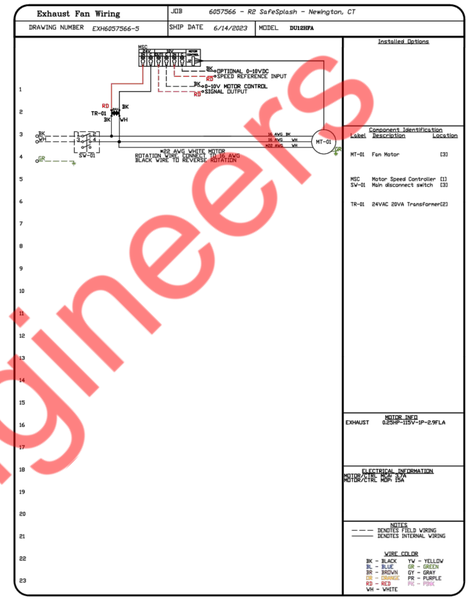
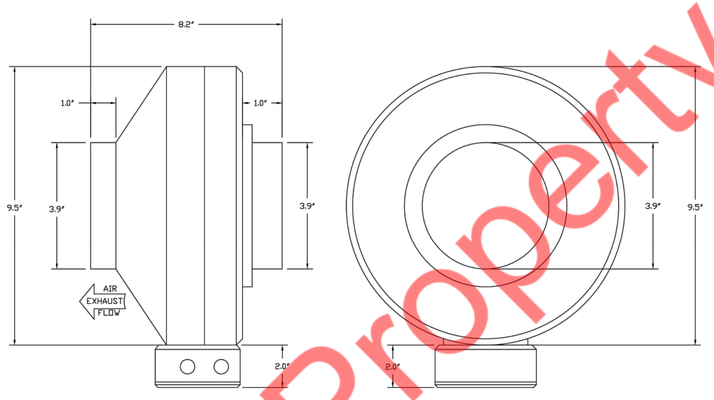


FAN #6 DFA-100-CA - EXHAUST FAN (EF-2)

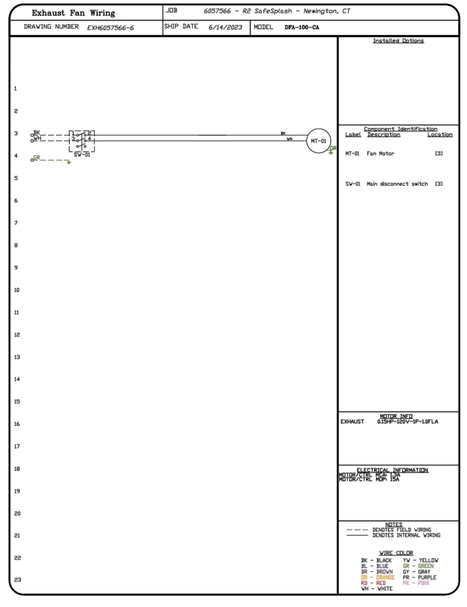


FEATURES:

- 20 GA. GALVANIZED STEEL HOUSING.
- STANDARD 4" - 12" ROUND DUCT CONNECTIONS.
- EASILY ACCESSIBLE J-BOX.
- UL507 LISTED.
- EXTREMELY QUIET OPERATION.

OPTIONS

- FAN CONTROL - 3 AMP WHITE SPEED CONTROL FOR CFA CEILING FAN.
- 2 YEAR PARTS WARRANTY.



REVISIONS

	DESCRIPTION	DATE:
1		
2		
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CAPTIVEAIRE

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R2 SafeSplash - Newington, CT
NEWINGTON, CT, 06111

DATE: 6/14/2023

DWG.#: 6057566

DRAWN BY: BDP

SCALE: 3/4" = 1'-0"

MASTER DRAWING

SHEET NO. 3

NY ENGINEERS

PROJECT

SAFE SPLASH/SWIMLABS

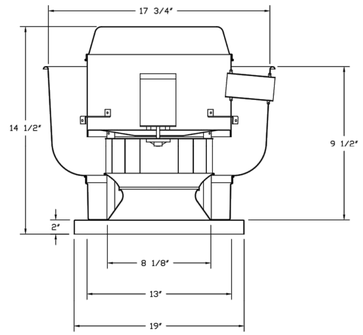
REVISIONS DATES:

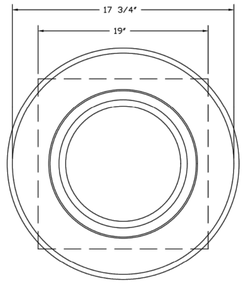
SR. NO.	DETAIL	DATE

DOAS SCHEDULE AND NOTES

M-9

FAN #7 DU10HFA - EXHAUST FAN (EF-3)





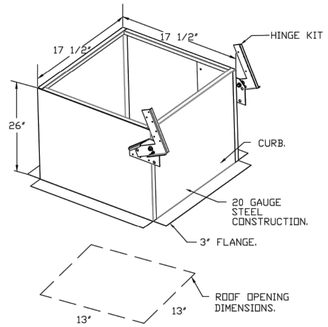
TOP VIEW

FEATURES:

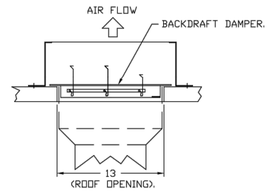
- DIRECT DRIVE CONSTRUCTION (NO BELTS/PULLEYS).
- ROOF MOUNTED FANS.
- UL705.
- VARIABLE SPEED CONTROL.
- INTERNAL WIRING.
- THERMAL OVERLOAD PROTECTION (SINGLE PHASE).

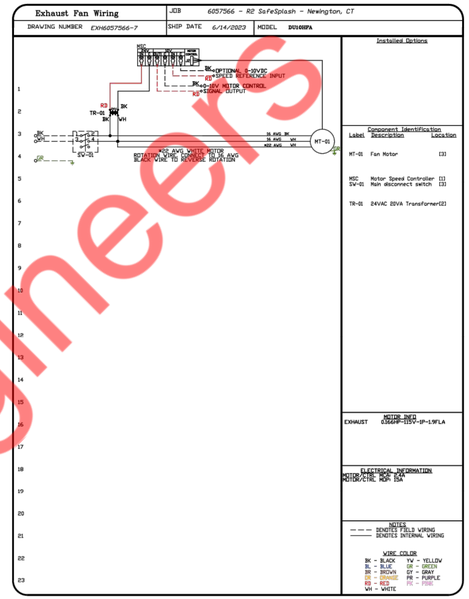
OPTIONS

- ECM WIRING PACKAGE - EXHAUST - MANUAL OR 0-10VDC REFERENCE SPEED CONTROL -MSC- (TELCD), CCW ROTATION.
- SCR-10 BIRD SCREEN.
- I 12-BDD DAMPER.
- 2 YEAR PARTS WARRANTY.

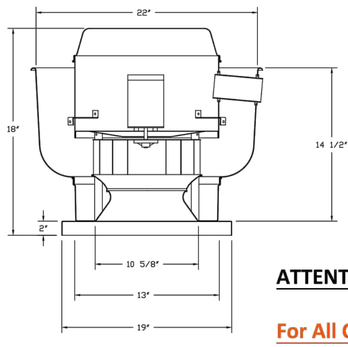


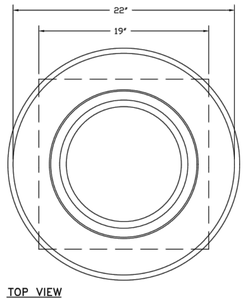
BACKDRAFT DAMPER INSTALLATION





FAN #8 DU12HFA - EXHAUST FAN (EF-4)





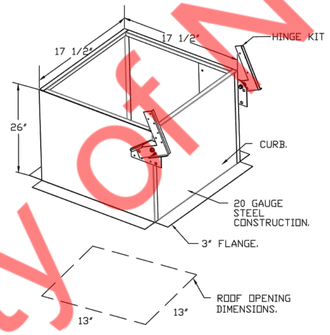
TOP VIEW

FEATURES:

- DIRECT DRIVE CONSTRUCTION (NO BELTS/PULLEYS).
- ROOF MOUNTED FANS.
- UL705.
- VARIABLE SPEED CONTROL.
- INTERNAL WIRING.
- THERMAL OVERLOAD PROTECTION (SINGLE PHASE).
- NEMA 3R SAFETY DISCONNECT SWITCH.

OPTIONS

- ECM WIRING PACKAGE - EXHAUST - MANUAL OR 0-10VDC REFERENCE SPEED CONTROL -MSC- (TELCD), CCW ROTATION.
- SCR-12 BIRD SCREEN.
- I 12-BDD DAMPER.
- 2 YEAR PARTS WARRANTY.



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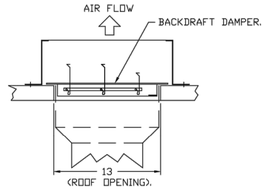
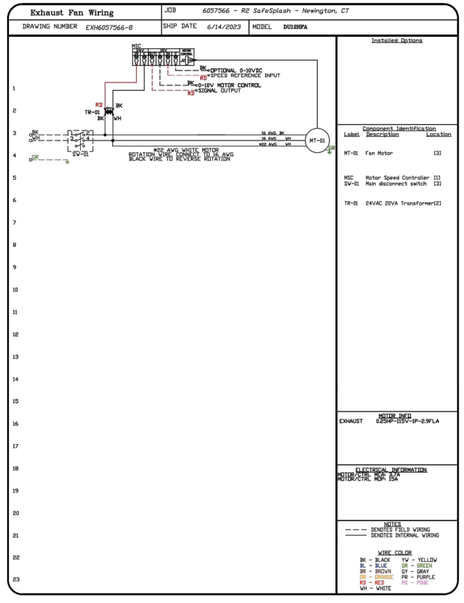
BACKDRAFT DAMPER INSTALLATION





REVISIONS

	DESCRIPTION	DATE:
1		
2		
3		
4		

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DATE: 6/14/2023

DWG.#: 6057566

DRAWN BY: BDP

SCALE: 3/4" = 1'-0"

MASTER DRAWING

SHEET NO. 4

NY ENGINEERS

PROJECT

SAFE SPLASH/SWIMLABS

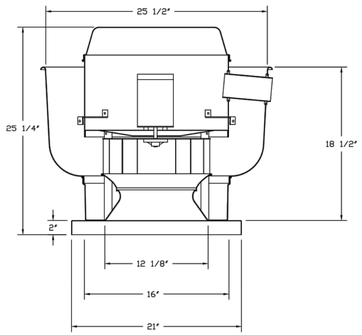
REVISIONS DATES:

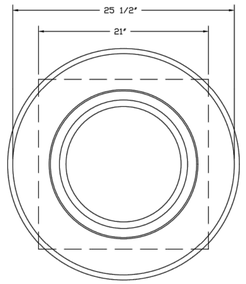
SR. NO.	DETAIL	DATE

DOAS SCHEDULE AND NOTES

M-10

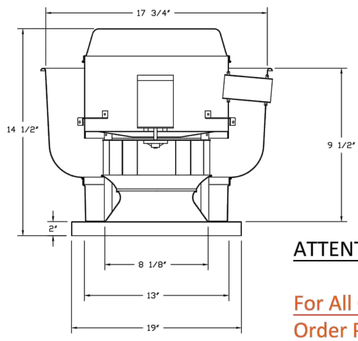
FAN #9 DU33HFA - EXHAUST FAN (EF-5)

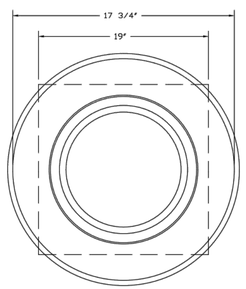




TOP VIEW

FAN #10 DU10HFA - EXHAUST FAN (EF-6)





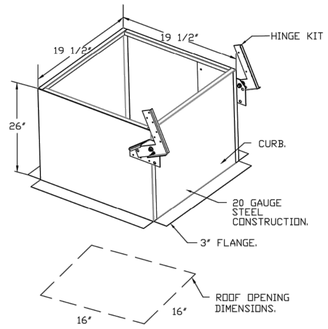
TOP VIEW

FEATURES:

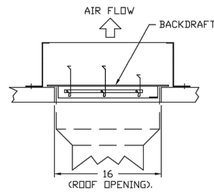
- DIRECT DRIVE CONSTRUCTION (NO BELTS/PULLEYS).
- ROOF MOUNTED FANS.
- UL705.
- VARIABLE SPEED CONTROL.
- INTERNAL WIRING.
- THERMAL OVERLOAD PROTECTION (SINGLE PHASE).
- NEMA 3R SAFETY DISCONNECT SWITCH.

OPTIONS

- ECM WIRING PACKAGE - EXHAUST - MANUAL OR 0-10VDC REFERENCE SPEED CONTROL -MSC- (TELCD), CCW ROTATION.
- SCR-11 BIRD SCREEN.
- 1 15-BDD DAMPER.
- 2 YEAR PARTS WARRANTY.



BACKDRAFT DAMPER INSTALLATION

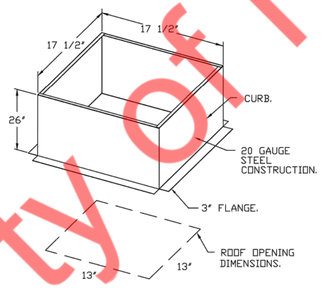


FEATURES:

- DIRECT DRIVE CONSTRUCTION (NO BELTS/PULLEYS).
- ROOF MOUNTED FANS.
- UL705.
- VARIABLE SPEED CONTROL.
- INTERNAL WIRING.
- THERMAL OVERLOAD PROTECTION (SINGLE PHASE).

OPTIONS

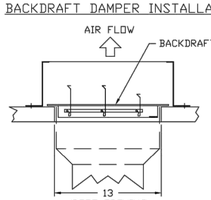
- ECM WIRING PACKAGE - EXHAUST - MANUAL OR 0-10VDC REFERENCE SPEED CONTROL -MSC- (TELCD), CCW ROTATION.
- SCR-10 BIRD SCREEN.
- 1 12-BDD DAMPER.
- 2 YEAR PARTS WARRANTY.



ATTENTION ALL BIDDING CONTRACTORS:

For All CaptiveAire Inquiries, Pricing, and Order Placement
Contact SafeSplash's National Account Manager
Justin Bennett at Justin@BennettMS.com

BACKDRAFT DAMPER INSTALLATION

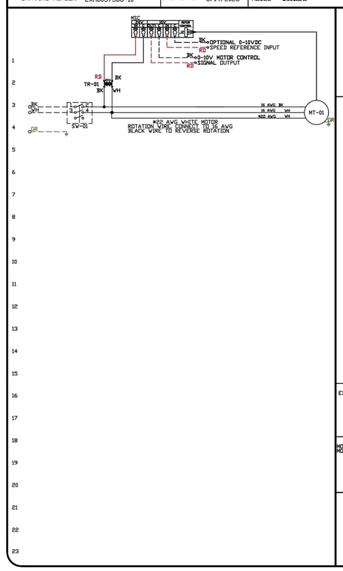


Exhaust Fan Wiring

DRAWING NUMBER EX#6057566-9	JOB 6057566 - R2 SafeSplash - Newington, CT
	SHIP DATE 6/14/2023
	MODEL DU33HFA

Exhaust Fan Wiring

DRAWING NUMBER EX#6057566-10	JOB 6057566 - R2 SafeSplash - Newington, CT
	SHIP DATE 6/14/2023
	MODEL DU10HFA



REVISIONS

	DESCRIPTION	DATE:
1		
2		
3		
4		

CAPTIVEAIRE
www.captiveaire.com

DATE: 6/14/2023

DWG.#: 6057566

DRAWN BY: BDP

SCALE: 3/4" = 1'-0"

MASTER DRAWING

SHEET NO. 5

NY ENGINEERS

PROJECT

SAFE SPLASH/SWIMLABS

REVISIONS DATES:

SR. NO.	DETAIL	DATE

DOAS SCHEDULE AND NOTES

M-11

SECTION 23 74 33
FACTORY FABRICATED PACKAGED, 100% OUTDOOR, HEATING AND COOLING MAKEUP AIR UNITS

SPECIFICATIONS
TAG: RTAS-1

PART 1 - GENERAL

1.1 SUMMARY

A. This section includes packaged heating and cooling units capable of supplying up to 100 percent outdoor air.

1.2 SUBMITTALS

A. The manufacturer assumes no liability for the use or results of use of this document. This specification is to be reviewed by the engineer to confirm requirements of the project and building codes are met.

B. As the manufacturer continues product development, it reserves the right to change design and specifications without notice.

1.3 SEISMIC DESIGN

A. Should the project be located within a seismic zone requiring special provisions for support and restraint of equipment, components, and piping, Refer to state or local codes for Seismic, Wind, Flood Load Design for additional requirements.

1.4 WIND LOAD DESIGN

A. Refer to state or local codes for Seismic, Wind, Flood Load Design for additional requirements.

1.5 QUALITY ASSURANCE

A. All models shall be ETL listed and comply to safety standards UL 1995, the Standard for Safety for Heating and Cooling Equipment. The Engineer of Record shall take responsibility for the approval of any modifications or additions to the unit, including aftermarket UV or ionization filtration devices.Units outfitted with indirect fired heaters shall also comply with ANSI Z83.8-2013, and CSA 2.6-2013.

B. All models shall be ETL listed and comply to safety standards CSA Std. C22.2, No. 236-11.

C. Units outfitted with indirect fired heaters shall also comply with ANSI Z83.8-2013, and CSA 2.6-2013.

D. This unit has been tested in accordance to the following standards:
- ANSI/AHRI Standard 340/360
- ANSI/ASHRAE Standard 37
- AHRI Standard 270/370

1.6 WARRANTY

A. All units shall be provided with the following standard warranties:
1. 10-Year (non-prorated) parts warranty covering the entire unit when accompanied by a company provided service plan. 5-Year (non-prorated) parts warranty covering the entire unit otherwise.
2. 25-year (non-prorated) parts warranty for SS heat exchanger on indirect fired units.

B. This warranty shall not apply if:
1. The equipment is not installed by a qualified installer per the manufacturer's installation instructions shipped with the product.
2. The equipment is not installed in accordance with Federal, State, and Local codes and regulations.
3. The equipment is misused, neglected, or not maintained per the manufacturer's maintenance instructions.
4. The equipment is not operated within its published capacity.
5. The invoice is not paid within the terms of the sales agreement.

C. The manufacturer shall not be liable for incidental and consequential losses and damages potentially attributable to malfunctioning equipment. Should any part of the equipment prove to be defective in material or workmanship within the 2-year warranty period, upon examination by the manufacturer, such part will be repaired or replaced by the manufacturer at no charge. The buyer shall pay all labor costs incurred in connection with such repair or replacement. Equipment shall not be returned without manufacturer's prior authorization. All returned equipment shall be shipped by the buyer, freight prepaid to a destination determined by the manufacturer.

PART 2 - PRODUCTS

2.1 GENERAL

A. Supply single zone one piece packaged units that are complete as per the following specification, deliver all capacities scheduled, and conform to design indicated herein. Alternate layouts or dimensional changes will not be accepted.

2.2 CABINET

A. Size 2, 3 or 4 units shall be constructed of minimum 20 gauge G-90 galvanized steel riveted together via structural pop-rivets. All metal shall be CNC bent for precise assembly. All metal shall be CNC bent for precise assembly.
1. Rigging Provisions: Cabinet sizes 2, 3 & 4 shall have a structural base constructed of minimum 14 gauge G-90 galvanized steel. Include full-sized fork pockets and lifting points on all four sides. Include full-sized fork pockets and lifting points on all four sides.
2. Roof Construction: The lids shall be fabricated by forming a double-standing, self-locking seam that requires no additional support. Roof shall be pitched to allow for proper drainage.
3. Exterior Wall Construction: All exterior walls shall consist of a double wall, G-90 galvanized steel construction. Cabinet sizes 2, 3 & 4 shall be insulated with 2in. thick, R13 closed cell foam.
4. Service Access Doors: All door jambs shall be gasketed around their perimeter, and allow for doors to be mounted via removable, spring actuated, stainless steel hinges with stainless steel rivets, and self-closing latches. Each compartment shall have independent access doors. Doors shall be sized for ease of maintenability. Electrical cabinet access doors shall have a door hold installed to prop doors open. All doors shall have stainless steel latches which are pad lockable. Electrical cabinet doors shall be outfitted with echem/tc/nanuk pouches formed into the door, along with wiring diagram attached to the indoor of the door from the factory.

B. Entire interior and exterior casing shall be constructed of minimum G90 galvanized steel. The unit casing will not be painted. Unit shall have undergone a salt spray corrosion test as per ASTM B 117.

2.3 AIRFLOW CONFIGURATIONS

A. Discharge: Unit shall be configurable for Down (Vertical) Discharge through the unit's base.

B. Discharge: Unit shall be configurable for Side (Horizontal) Discharge through the cabinet.

C. Return: Unit shall be configurable for Side (Horizontal) Return through the cabinet.

D. Return: Unit shall be configurable for No Return.

E. Unit intake airflow configuration shall be through use of a fresh/outdoor and return air damper.
1. Damper: Shall exceed AMCA Class 1A standard for low leakage. Damper assembly shall be a single assembly, and outfitted with an integral bird screen. Louver/gutter system used to divert any drainage through the units base - intake air hood not required.
2. Actuator: A single direct drive damper actuator shall be used with spring return to ensure that the outdoor air section closes when not powered.

2.4 SUPPLY AIR BLOWER AND MOTOR

A. All supply fans shall be direct drive (belt-drive not acceptable) variable speed plenum fans.

B. Blower Motor: Motor shall be a premium efficiency motor available as:

C. Fans to be selected at or near efficiency peak. (Submit fan curves)

D. Blower and motor assembly shall be dynamically balanced. The entire blower and motor assembly shall be mounted on rubber vibration isolators. Wheels balanced as per AMCA 204-96, Balance Quality and Vibration Levels for Fans.

E. Unit equipped with total CFM monitoring to measure airflow across supply discharge.

2.5 REFRIGERATION SYSTEM Fans #1, 2:

A. Unit shall utilize a variable speed inverter duty scroll compressor with the following features:
1. Modulation: Compressor shall be capable of compressor speed modulation from 2315-10012 on 15, 20, 25, 25, & 30 Ton units.
2. Refrigerant: Unit shall be factory charged with R410A refrigerant.
3. Vibration Isolation: Compressor as well as blower assembly shall each be mounted on rubber vibration isolators to reduce transmission of vibration to the building structure.
4. Internal Diagnostics: Compressor shall include internal thermal overload production to protect against excessive motor temperatures.
5. Crankcase Heater: Compressor shall include a crankcase heater to prevent liquid refrigerant shock and dilution of oil flooding on startup. The crankcase heater must remain powered when the compressor is not in operation.
6. DX Management: Unit shall utilize both passive and active oil return management using DX Level Sensor and scheduled oil boosts.
7. Monitored Envelope: Unit shall monitor all critical refrigeration points to ensure compressor does not operate outside of safe operating envelope.
8. Throttling Logic: Unit shall allow for high head pressure monitoring throttle mode for high ambient operation, and low suction pressure throttle mode for low capacity operation or any conditions resulting in low suction pressure.
9. Pump-Down: Active pump-down mode with discharge line check valve to protect against liquid migration into compressor during idle times.

B. The unit shall be outfitted with the following:
1. Indoor Coil: Indoor coil shall be a high efficiency 7 row coil design with aluminum fins mechanically bonded to copper tubes. Coil is staggered to increase turbulence, reduce the coil bypass factor, and ultimately increase the the air stays within the coil. Includes two probe sensors to read average coil face temperature.
2. Electronic Expansion Valve: Each refrigeration circuit will be outfitted with an electronic expansion valve metering device which can be throttled from 0-1000 open to allow for precise superheat control.
3. Indoor Coil Drain Pan: The indoor coil shall be outfitted with a sloped stainless steel drain pan. This pan shall be insulated along the entire base to prevent condensation, and outfitted with a safety overflow switch which will automatically shut down cooling operation prior to water overflowing the drain pan in the event of a drain clog. The entire drain pan shall be 20 GA Stainless Steel construction and wrap beneath the entire coil with flashing on entering side of coil to ensure capture of all condensate. Drain pan discharge pipe shall also be stainless steel construction. Drain pan shall be pitched to exceed ASHRAE 62.1 standard.
4. Base of the condensing coil cabinet shall be pitched away from the unit as a safety to ensure all draining exits away from the curb.
5. Optional Hot Gas Reheat Coil: The unit shall include an optional copper tube and aluminum fin hot gas reheat coil mounted downstream of the indoor coil. This coil shall be controlled via fully modulating hot gas reheat valve to provide precise reheat capabilities. The hot gas reheat coil shall be controlled via evaporative coil leaving condition sensor to maintain a coil dew point. This also prevents operation of a dehumidification call when intake dew point conditions are found to be below space dew point conditions, preventing wasted energy.
6. Outdoor (Condenser) Coil: Outdoor coil shall be a high efficiency fin design. Fins shall be mechanically bonded to copper tubes. The coil shall be downward sloped to protect coil from hail damage. Mixed air shall have optional 2" MERV-13 filters. Mixed air shall have optional 2" MERV-8 filters.
7. Outdoor Fans: The outdoor coil shall have a vertical discharge outfitted with quiet, efficient, fully modulating Electronically Commutated Motor (ECM) condensing fans. These fans shall modulate to maintain a temperature differential between outside air and the outdoor coil.

C. To help mitigate any long-term potential for leaks or hardware failures, the unit shall be outfitted with the following protection measures:
1. Suction line accumulator for added protection against liquid entering suction line of compressor.
2. Bi-flow, low pressure drop, filter drier.
3. Electronic Expansion Valve (EEV) for precise superheat control. EEV shall open partially allowing system pressure equalization prior to activation of the compressor.
4. On optional heat pump units, use of a single 3-way reheat valve to prevent obstructions due to valve failure (HP).
5. Protective rubber sleeves installed on all distribution lines of indoor coil to prevent wear from rubbing.
6. All refrigeration ports shall be short-stub assembly and any access port with a transducer or switch is mounted vertically to mitigate risk of debris/contact stub ports.
7. Refrigeration circuit shall be mechanically CNC pre-bent tubing wherever possible with minimal brazed joints to minimize points for potential refrigeration leaks.
8. Factory tested for leaks via high pressure nitrogen decay and helium tracer gas testing.
9. Suction line temperature sensor failure detection.
10. Proactive failure alerts through a manufacturer provided, cloud based, cellular remote monitoring system.

2.6 HEATING SYSTEM

A. The gas burner shall be an indirect-fired, push-through type, using natural gas or liquid propane gas. The inlet-supply pressure to the unit for natural gas must be 7" w.c. minimum. For liquid propane gas, the minimum inlet supply pressure to the unit must be 11" w.c.

B. Burner shall be a tubular in-shot fired design capable of using natural or LP type gas. Each burner ignition shall be of the direct-spark design with remote flame sensing at inlet of the last firing tube of the gas manifold.

C. Direct-spark ignition sequence shall last through the complete duration of the trial for ignition period for guaranteed light-off. Burner shall always be lit at maximum gas flow and combustion airflow for guaranteed light-off. Each burner ignition module shall have LED indicators for troubleshooting and a set of exposed pins for testing flame indication signal.

D. All furnaces shall be controlled by an electronic Vernier-type fully modulating control system capable of achieving 80% combustion efficiency over the entire gas firing range of the unit.

E. Each furnace shall have:
1. A minimum turndown ratio of 12:1 for natural gas and 10:1 for LP gas while maintaining a constant 80% efficiency (90% on high efficiency furnace option). No cold air bypass of the heat exchanger.
2. Each furnace heat exchanger shall be a bent-tube style design made entirely of stainless steel.
3. Stainless steel Quick Seal Connection for gas connection.
4. Manifold and Input gas pressure gauges.
5. Factory piped condensate drain to exterior of cabinet.
6. A combustion flue to be installed on adjacent side as combustion intake with integrated high velocity wind cap.
7. A blocked vent safety airflow switch with high temperature silicone tubing operating off of absolute pressure measured inside of the power-vent blower housing.
8. A high temperature auto-recycling limit with a maximum non-adjustable set point.
9. A manual reset high temperature flame rollout switch with a non-adjustable set point.
10. Each furnace compartment shall have a removable post and panel that allows the furnace to be easily removed for service and maintainability.
11. A power-vent assembly for exhausting flue gases with a PSC or ECM type motor that is securely mounted and easily accessible/removable for service.
12. A 0-10 w.c. gas pressure gauge installed on the gas manifold.

2.7 Controls

A. Unit shall be outfitted with a control board to allow for full control of the entire unit.

B. Provide air flow switch on the supply fan system to sense air flow with available set of contacts for connection to BMS for airflow alerts.

C. All unit controls shall be compatible with BACnet and LonWorks based building management systems.

D. All units shall be outfitted with CASLink cloud based monitoring, which monitors every point of operation. Provides configurable automated fault alert e-mails, and remote control capabilities.

E. Integrated cellular module to provide remote connection to monitoring services to view both real time and historical unit operation. Data shall be stored a minimum of 3 years on the cloud. Data sample rate shall be a maximum of 60 seconds.

F. Temperature Control System

1. Space Temp Control (Heating)

Unit modulates the burner flame (current supply in the case of electric heating) to accurately maintain the desired space temperature set point and compensate for fluctuations in entering air temperature, air volume and % of OA using heating PID controls designed specifically for the IDAS. Minimum and maximum discharge set points can be set to limit the temperature entering the space. An optional additional HMI or room thermostat can be used to determine the space temperature. In the case that no temperature sensor is available in the space, the unit will use an internal return temperature sensor.

2. Space Temp Control (Cooling)

Fans #1, 2: Unit modulates the compressor frequency to accurately maintain the desired space temperature set point and compensate for fluctuations in entering air temperature, air volume and % of OA using cooling PID controls designed specifically for the IDAS. Minimum and maximum discharge set points can be set to limit the temperature entering the space. An optional additional HMI or room thermostat can be used to determine the space temperature. In the case that no temperature sensor is available in the space, the unit will use an internal return temperature sensor.

3. Space Temp Control (Heat Pump)

Fans #1, 2: Unit modulates the compressor frequency to accurately maintain the desired space temperature set point and compensate for fluctuations in entering air temperature, air volume and % of OA using heating PID controls designed specifically for the IDAS. Minimum and maximum discharge set points can be set to limit the temperature entering the space. When ambient temperatures drop below a user configurable minimum outdoor air temperature set point, or the unit is not able to maintain a user configurable minimum discharge temp for 3 minutes time, the heat pump will initiate its backup heat source. Initiation of backup heater operation will be delayed by a user set time delay in addition to derating heat pump to reduce sure discharge temps are more impacted during changeover. An optional additional HMI or room thermostat can be used to determine the space temperature. In the case that no temperature sensor is available in the space, the unit will use an internal return temperature sensor.
<HEATPUMP>

4. Space Humidity Control (Dehumidification)

Fans #1, 2: Unit modulates the compressor frequency to accurately maintain a desired evaporative coil dew point measured via a coil mounted temperature sensor between the evaporative and hot gas reheat coils. Fully modulating hot gas reheat valve and face bypass damper to allow for precise control of reheating the hot gas off of the coil with the temperature amount needed to accurately reheat the airstream in order to maintain a desired space dew point temperature, compensating for fluctuations in entering air temperature, air volume and % of OA using proprietary dehumidification PID controls designed specifically for the IDAS.

5. Advanced Total Unit Economizer: The control system is outfitted standard, without need for any additional hardware, with an Advanced Total Unit Economizer which will take maximum advantage of as much energy available in the outdoor air conditions in order to run the compressor the minimum amount required at any given incoming air conditions. If the outdoor enthalpy (temperature and relative humidity) permits, the unit will be capable of completely modulating and shutting off compressor to provide 'free' cooling and dehumidification as the outdoor air conditions allow.

G. Activation Controls:

1. Activate Based on Intake (Heating)

Unit will activate heating when the intake temperature drops below the desired set point.

2. Activate Based on Intake (Cooling)

Fans #1, 2: Unit will activate cooling when the intake temperature rises above the desired set point.

3. Activate Based on Intake (Dehumidification) Fans #1, 2:

Unit will activate dehumidification when the intake conditions rise above the desired intake set point, with activation set points configured to a Dew Point, Relative Humidity or a combination of Dew Point/Relative Humidity.

4. Activate Based on Space (Heating)

Unit will activate heating when the space temperature drops below the desired set point.

5. Activate Based on Space (Cooling)

Fans #1, 2: Unit will activate cooling when the space temperature rises above the desired set point.

6. Activate Based on Space (Dehumidification) Fans #1, 2:

Unit will activate dehumidification when the space set point rises above the desired space set point, with activation set points configured to a Dew Point, Relative Humidity or a combination of Dew Point/Relative Humidity.

7. Activate Based on Both (Heating)

Unit will activate heating when the space AND intake temperature drop below the desired set point.

8. Activate Based on Both (Cooling)

Fans #1, 2: Unit will activate cooling when the space AND intake temperature rise above the desired set point.

9. Activate Based on Both (Dehumidification)

Fans #1, 2: Unit will activate dehumidification when the space and intake set point rise above the desired space and intake set point, with activation set points configured to a Dew Point, Relative Humidity or a combination of Dew Point/Relative Humidity.

10. Activate Based on Either (Heating)

Unit will activate heating when the space OR intake temperature drop below the desired set point.

11. Activate Based on Either (Cooling)

Fans #1, 2: Unit will activate cooling when the space OR intake temperature rises above the desired set point.

12. Activate Based on Either (Dehumidification)

Fans #1, 2: Unit will activate dehumidification when the space or intake set point rises above the desired space or intake set point, with activation set points configured to a Dew Point, Relative Humidity or a combination of Dew Point/Relative Humidity.

13. Activate Based on Stat (Heating)

Unit will activate heating when the space thermostat sends a 24V signal to W and G on the main control board. Unit will modulate to maintain a constant discharge heat set point.

14. Activate Based on Stat (Cooling)

Fans #1, 2: Unit will activate cooling when the space thermostat sends a 24V signal to Y and G on the main control board. Unit will modulate to maintain a constant discharge cool set point.

2.8 ROOF CURB

A. Unit shall be factory assembled, and constructed of 18GA galvanized steel, with optional 16GA available.

B. Curb shall be fully insulated with 1"acoustical and thermal insulation.

C. Curb shall be factory fabricated with duct support hangers.

2.9 VARIABLE FREQUENCY DRIVES

A. Provide Variable Frequency Drive for the compressor as part of the AC unit. VFD shall be furnished and installed to meet the performance set forth in the schedule and as specified under another section of this work.
1. Accessories to be furnished and mounted by the drive manufacturer and contained in a single enclosure. (The use of more than one enclosure is not acceptable).

B. Provide Variable Frequency Drive for speed control on all non-ECM direct drive supply fans.

C. All VFDs shall provide the following inherent protections:
1. Phase protection.
2. Brownout protection.
3. Overload/Overheat protection.
4. Soft starts to protect bearings/hardware.
5. Low & High voltage & over-torque protections.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine areas and conditions under which packaged units are to be installed. Do not proceed with work until unsatisfactory conditions have been corrected in a manner acceptable to Installer.

3.2 INSTALLATION

A. Install in accordance with manufacturer's instructions, drawings, written specifications, manufacturer's installation manual and all applicable building codes.

3.3 CONNECTIONS

A. Piping installation requirements are specified in other Division 23 Sections. Drawings indicate the general arrangement of piping, fittings, and specialties. Install piping to allow service and maintenance.

B. Duct installation requirements are specified in other Division 23 Sections. Drawings indicate the general arrangement of ducts.

C. Electrical: Conform to applicable requirements in Division 26 Sections.

3.4 SYSTEM START-UP

A. System start-up is performed by a factory trained Service Technician.

END OF SECTION 23 74 33

SECTION 23 34 23
POWER VENTILATORS
TAG: Centrifugal Upblast

PART 1 - GENERAL

1.1 SUMMARY

A. Fan shall be a spun aluminum, G90 Galvanized, roof or wall-mounted, direct drive, upblast centrifugal exhaust ventilator.

1.2 SUBMITTALS

A. The manufacturer assumes no liability for the use or results of use of this document. This specification is to be reviewed by the engineer to confirm requirements of the project and building codes are met.

B. As the manufacturer continues product development, it reserves the right to change design and specifications without notice.

1.3 QUALITY ASSURANCE

A. ETL Listed and complies with UL705 (electrical) Standards and CSA Std C22.2, No 113.

B. ETL Listed and comply with UL762 and ULC-S645 Standards.

C. Fan shall bear the AMCA certified rating seal for air performance.

D. Wheels shall be balanced in two planes and done in accordance with AMCA standard 204-96, Balance Quality and Vibration Levels for Fans.

1.4 WARRANTY

A. All units are provided with the following 2-year standard warranty from date of shipment.

B. This warranty shall not apply if:
1. The equipment is not installed by a qualified installer per the manufacturer's installation instructions shipped with the product.
2. The equipment is not installed in accordance with Federal, State, and Local codes and regulations.
3. The equipment is misused, neglected, or not maintained per the manufacturer's maintenance instructions.
4. The equipment is not operated within its published capacity.
5. The invoice is not paid within the terms of the sales agreement.

C. The manufacturer shall not be liable for incidental and consequential losses and damages potentially attributable to malfunctioning equipment. Should any part of the equipment prove to be defective in material or workmanship within the 2-year warranty period, upon examination by the manufacturer, such part will be repaired or replaced by the manufacturer at no charge. The buyer shall pay all labor costs incurred in connection with such repair or replacement. Equipment shall not be returned without manufacturer's prior authorization. All returned equipment shall be shipped by the buyer, freight prepaid to a destination determined by the manufacturer.

PART 2 - PRODUCTS

2.1 GENERAL ASSEMBLY

A. The fan shall be factory assembled, tested, and shipped as a complete unit.

B. The following specifications, delivering all capacities scheduled and conforming to the design indicated herein. Alternate layouts or dimensional changes will not be accepted.

2.2 CONSTRUCTION

A. The fan wind band shall be constructed of heavy gauge aluminum or G90 Galvanized and shall be spun on an automatic lathe to provide consistent dimensions.

B. Horizontal and vertical internal supports shall be used to fasten the wind band to the discharge apron securely. This provides rigidity for hinging and added strength to reduce shipping damage.

C. The discharge apron shall have a rolled bead for added strength.

D. Base corners shall be welded to provide strength and support for hinging and cleaning and prevent leakage into the building.

E. The fan shall bear a permanently attached nameplate displaying model and serial number of unit for future identification.

F. Nylon washers provide a tight seal. All fasteners in the fan housing shall be backed with nylon washers.

G. The unit shall be factory tested after assembly.

2.3 CURB

A. The curb shall be constructed of galvanized steel.

B. The heavy duty G90 galvanized curb cap shall have fully welded corners for added strength and leak protection.

C. Fan #3 has curb options:
1. Hinged Base: Locking Attached
2. Paint Option: Not Painted
3. Insulated

D. Fan #4 has curb options:
1. Hinged Base: Locking Attached
2. Paint Option: Not Painted
3. Insulated

E. Fan #5 has curb options:
1. Hinged Base: None
2. Paint Option: Not Painted
3. Insulated

F. Fan #7 has curb options:
1. Hinged Base: Locking Attached
2. Paint Option: Not Painted
3. Insulated

G. Fan #8 has curb options:
1. Hinged Base: Locking Attached
2. Paint Option: Not Painted
3. Insulated

H. Fan #9 has curb options:
1. Hinged Base: Locking Attached
2. Paint Option: Not Painted
3. Insulated

I. Fan #10 has curb options:
1. Hinged Base: None
2. Paint Option: Not Painted
3. Insulated

2.4 WHEEL

A. The fan wheel shall be centrifugal backward inclined and non-overloading.

B. The wheel blades shall be aerodynamically designed to minimize turbulence, increase efficiency and reduce noise.

C. The wheel blades shall be welded to the wheel inlet cone.

D. If balancing weights are required, they shall be riveted to the blades or wheel.

E. The wheel inlet shall overlap the fan base inlet for maximum performance and efficiency.

F. The wheel shall be firmly attached to the motor shaft with two set screws.

2.5 MOTOR

A. Fan(s) 3, 4, 5, 7, 8, 9, 10 Motor Type: Totally Enclosed Air Over Electronically Commutated Motor (TEAO-ECM).

B. Motor shall be permanently lubricated and rated for continuous duty.

C. Furnished at the specified voltage, phase, and enclosure. Motor speed shall be variable, controlled using an integrated speed controller.

D. Motors shall be mounted out of the airstream and furnished at the specified voltage, phase, and enclosure.

E. Motor mounting plate shall be constructed of heavy gauge galvanized steel.

F. The motor compartment shall be cooled by outside air drawn through an extruded aluminum conduit tube.

G. An integral electrical conduit running from the fan base to the motor compartment is provided for ease of installation.

H. The conduit tube passage shall be sealed to prevent noise. Silicone rubber grommets shall isolate the conduit tube from the fan housing.

I. The motor compartment shall be a two-piece construction. The cap has quick-release clips to provide fast and easy access to the motor compartment.

2.6 ECM EXHAUST WIRING PACKAGES

A. Fans #3, 4, 5, 7, 8, 9, 10 ECM Wiring Package - Exhaust - Manual or 0-10VDC Reference Speed Control -MSC- (TELCD), CCW Rotation

2.7 CONTROL OPTIONS

A. Fans #3, 4: Current Sensor Mounted in Exhaust Fan for use with Pool Room Temp Control.

B. Fans #3, 4: MSC to be set up for Control Type: 0-10V -Telco.

2.8 OPTIONS AND ACCESSORIES

A. Fan #3 has fan options:
1. Bird Screen.
2. Bird Screen.
3. Bird Screen.
4. Bird Screen.
5. Bird Screen.

B. Fan #4 has fan options:
1. Bird Screen.
2. Bird Screen.
3. Bird Screen.
4. Bird Screen.
5. Bird Screen.

C. Fan #5 has fan options:
1. Bird Screen.
2. Bird Screen.
3. Bird Screen.

D. Fan #7 has fan options:
1. Bird Screen.
2. Bird Screen.
3. Bird Screen.

E. Fan #8 has fan options:
1. Bird Screen.
2. Bird Screen.
3. Bird Screen.

F. Fan #9 has fan options:
1. Bird Screen.
2. Bird Screen.
3. Bird Screen.

G. Fan #10 has fan options:
1. Bird Screen.
2. Bird Screen.
3. Bird Screen.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine areas and conditions under which package(s) are to be installed. Do not proceed with work until unsatisfactory conditions have been corrected in a manner acceptable to Installer.

3.2 INSTALLATION

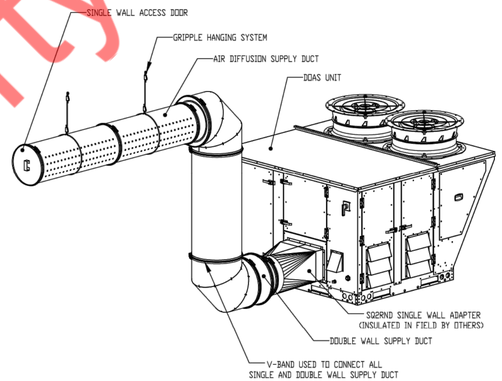
A. Install in accordance with manufacturer's instructions, drawings, written specifications, manufacturer's installation manual, and all applicable building codes.

3.3 CONNECTIONS

A. Electrical connections conform to applicable requirements in Division 26 Sections.

3.4 SYSTEM START-UP

A. System start-up is performed by a factory-trained Service Technician.

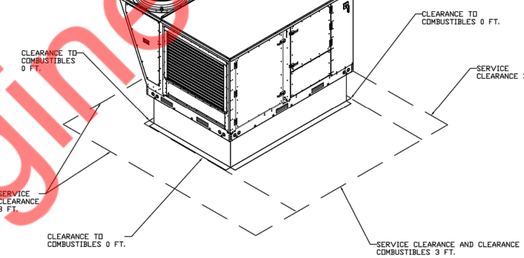


AIR DIFFUSION SUPPLY DUCT SPECIFICATIONS:
PROVIDE AIR DIFFUSION SUPPLY DUCT EQUAL TO CAPTIVEAIRE SYSTEMS MODEL DW-S0(HC), DW-S90(HC), & DW-S180(HC).
THREE DISTINCT HOLE PATTERN OPTIONS TO COVER A VARIETY OF CEILING HEIGHTS.
NO ADDITIONAL DIFFUSERS REQUIRED, AS THE DUCT ITSELF PROVIDES AIR DIFFUSION.
MADE OF HIGH QUALITY STAINLESS STEEL DESIGNED TO LAST 20+ YEARS.
HIGH INDUCTION SUPPLY DUCT IS CONSTRUCTED USING 24 GAUGE, 430 SS - 5" THRU 24".
HIGH INDUCTION SUPPLY DUCT IS CONSTRUCTED USING 20 GAUGE, 430 SS - 26" THRU 36".
QUICK ONSITE ASSEMBLY USING EPDM GASKETS & UNIVERSAL V-BANDS.
DOUBLE WALL SUPPLY DUCT AVAILABLE FOR INTERIOR AND EXTERIOR SPACES, EITHER CONDITIONED OR UNCONDITIONED.
DOUBLE WALL SUPPLY DUCT AVAILABLE IN DW-1S, DW-2S, & DW-3S TO MEET SPECIFIC REGIONAL "R" VALUE REQUIREMENTS.

Insulation R-Value Recommendations

Supply Duct Type	Minimum R-value	Space Type
Single Wall - S & -HC	N/A	Conditioned Space Only
Double Wall - 1S	R-4	Unconditioned Interior Space Only
Double Wall - 2S	R-8	Unconditioned Space Climate Zones 1-4
Double Wall - 3S	R-12	Unconditioned Space Climate Zones 5-8

DOUBLE WALL SUPPLY DUCT IS INSULATED WITH A 24 GAUGE 430 STAINLESS OUTER SHELL.
AIR DIFFUSION SUPPLY DUCT COMPLIES WITH SMACNA (SHEET METAL AND AIR CONDITIONING CONTRACTORS) BEST PRACTICES.
POSITIONING OF SPRINKLERS TO AVOID OBSTRUCTION TO DISCHARGE, SEE NFPA 13, TABLE 8.12.5.1.1.



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SAFE SPLASH/SWIMLABS

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SCALE: 3/8" = 1'-0"

MASTER DRAWING

SHEET NO. 6

DOAS SCHEDULE AND NOTES

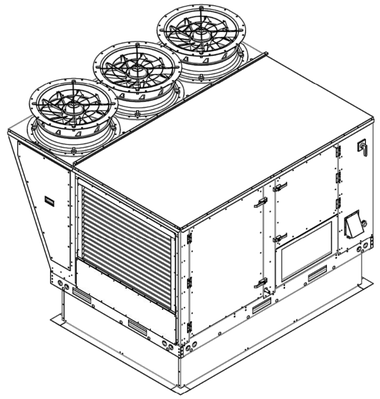
M-12

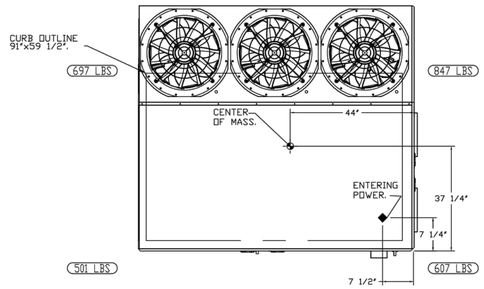
FAN #1 CASRTU3-I.500-18-20T - HEATER (DU-1)

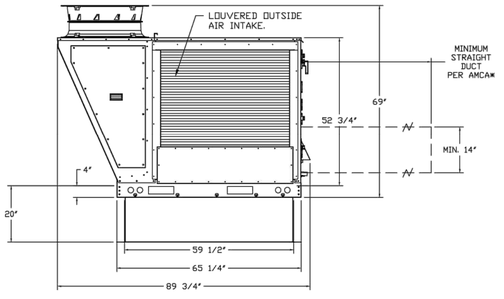
NOTES:

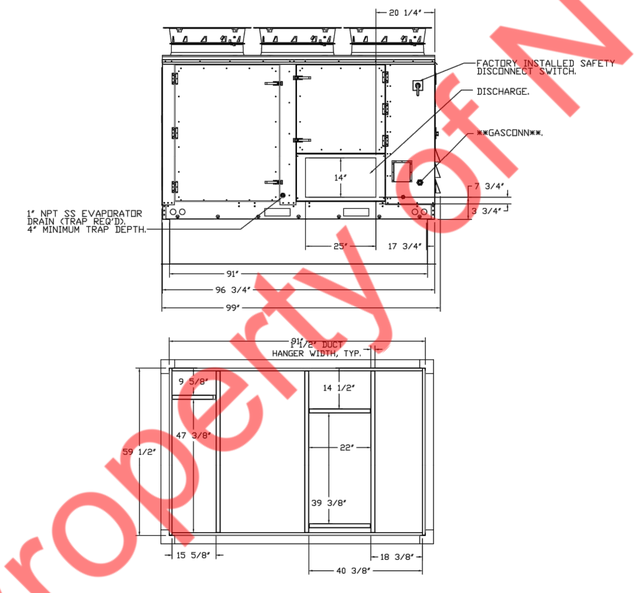
1. DO NOT OBSTRUCT OUTSIDE AIR INLET, OUTSIDE AIR COIL OR OUTSIDE AIR FAN.
2. ( ) DENOTES CORNER WEIGHT.
3. ROOF OPENING MUST BE 2" SMALLER THAN CURB DIMENSIONS IN BOTH DIRECTIONS.

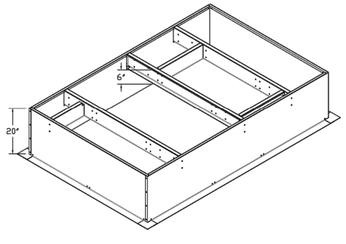
*NOTE: SUPPLY DUCT MUST BE INSTALLED TO MEET SMACNA STANDARDS. A MINIMUM STRAIGHT DUCT LENGTH MUST BE MAINTAINED DOWNSTREAM OF UNIT DISCHARGE AS OUTLINED IN AMCA PUBLICATION 201. WHEN USING RECTANGULAR DUCTWORK, ELBOWS MUST BE RADIUS THROAT, RADIUS BACK WITH TURNING VANES. FLEXIBLE DUCTWORK AND SQUARE THROAT/SQUARE BACK ELBOWS SHOULD NOT BE USED. ANY TRANSITION AND/OR TURNS IN THE DUCTWORK WILL CAUSE SYSTEM EFFECT. SYSTEM EFFECT WILL DRASTICALLY INCREASE STATIC PRESSURE AND REDUCE AIRFLOW. DO NOT RELY ON UNIT TO SUPPORT DUCT IN ANY WAY. FAILURE TO PROPERLY SIZE DUCTWORK MAY CAUSE SYSTEM EFFECTS AND REDUCE PERFORMANCE OF THE EQUIPMENT.
SUGGESTED STRAIGHT DUCT SIZE IS 25" x 14".











ATTENTION ALL BIDDING CONTRACTORS:

For All CaptiveAire Inquiries, Pricing, and Order Placement Contact SafeSplash's National Account Manager Justin Bennett at Justin@BennettMS.com

ROOM TEMPERATURE/HUMIDITY SENSOR

The space temperature/humidity sensor should be installed in the pool room in a vapor proof (or similar) single gang box. Sensor will be wired back to the corresponding pool unit.

Sensor should not be installed on an exterior wall, or near any area in the pool room that would cause inaccurate temperature/humidity readings.

*** NOTE ***

Contractor must field install factory supplied discharge air sensor at least 6' into the supply duct

*** NOTE ***

HMI to be installed in manager's office. Temperature/humidity sensor to be installed INSIDE pool room

POOL EXHAUST FAN(S) SEQUENCE OF OPERATIONS:

Pool exhaust fan(s) are to be interlocked with pool unit(s). Pool exhaust fan(s) and pool unit(s) can be setup to modulate from 80-100% of design airflow shown as determined by space relative humidity.

In the event of a CO alarm, the exhaust fans will shut down with the pool unit, and an alert will be sent to the pool units HMI and the CASLINK building management system to notify the operator.

ATTENTION ELECTRICIAN

Pool exhaust fan(s) are to be interlocked with pool unit(s). This will require two separate 18/2 wires from the pool exhaust fans to the pool unit controlling it.

CO detector(s) are supplied with the system, and will be powered from the pool unit. There will be one detector per pool unit if multiple pool units are required. Each detector will require an 18/4 wire from the pool unit it is associated with.

A hard wired Internet connection is required at the pool unit for the CASLINK building management system. For multiple pool units, or additional RTU's by CaptiveAire, this connection can be daisy chained between units.

Consult wiring diagrams and job site specific SDV checklist for additional wiring requirements (high and low voltage).

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MASTER DRAWING

SHEET NO. 7

NY ENGINEERS

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SAFE SPLASH/SWIMLABS

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DOAS SCHEDULE AND NOTES

M-13

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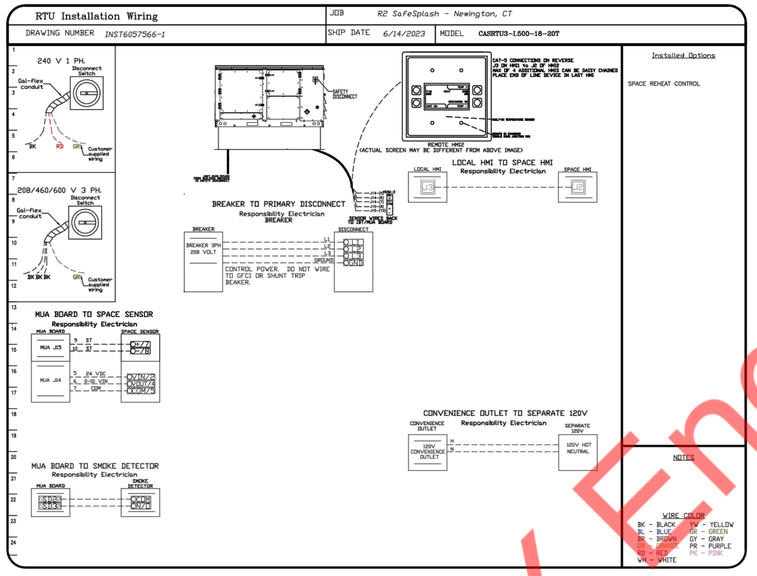

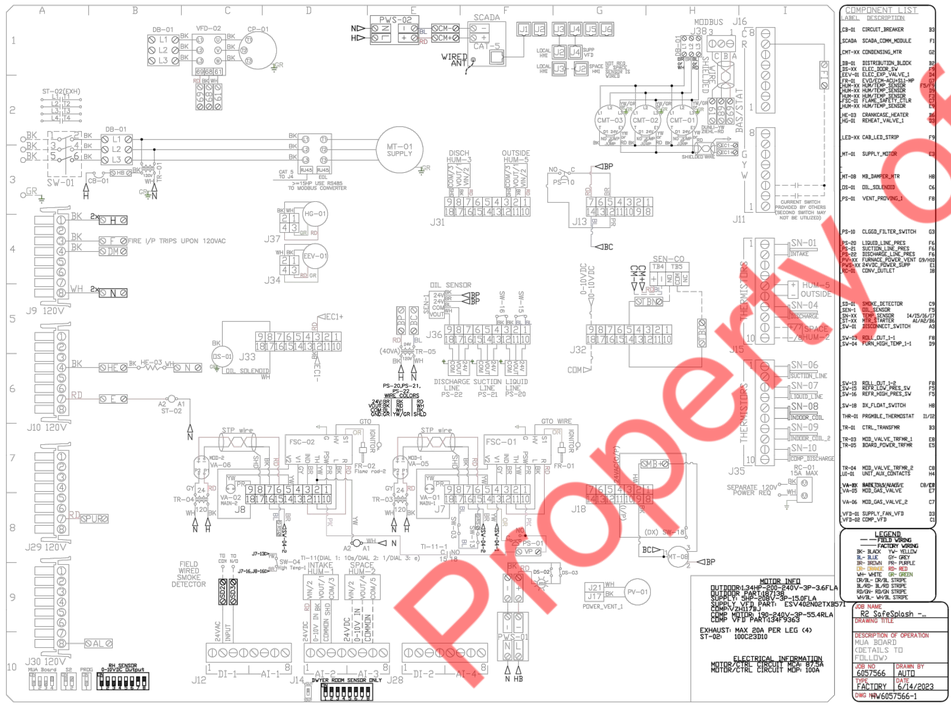

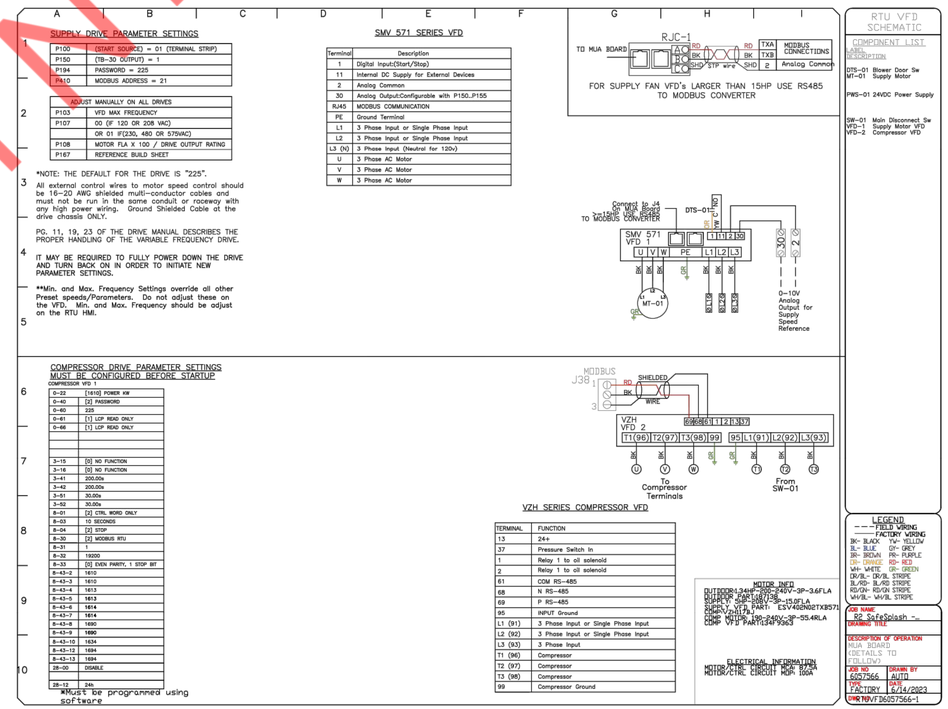

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SCALE: 3/4" = 1'-0"

MASTER DRAWING

SHEET NO. 8

DOAS SCHEDULE AND NOTES

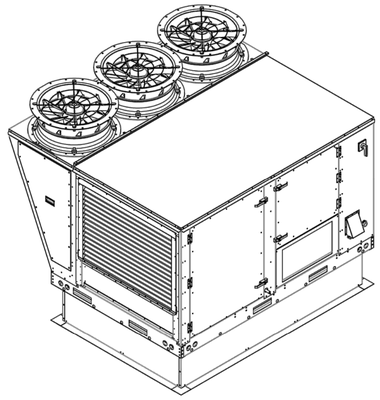
M-14

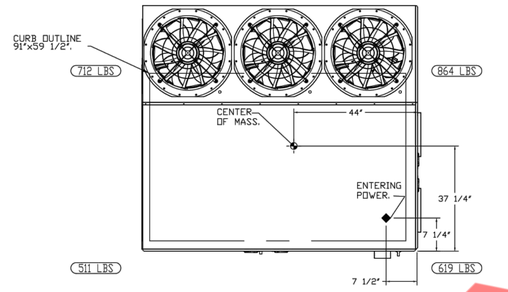
FAN #2 CASRTU3-I.400-24MF-20T - HEATER (RTU-1)

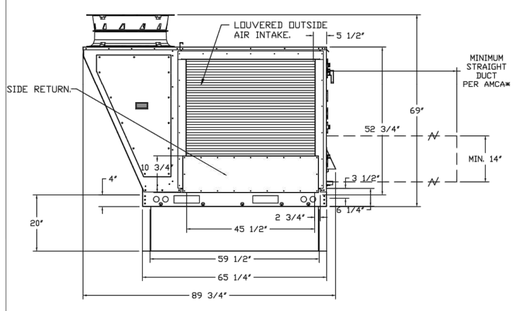
NOTES:

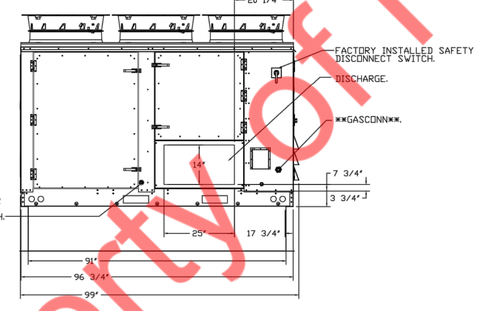
1. DO NOT OBSTRUCT OUTSIDE AIR INLET, OUTSIDE AIR COIL OR OUTSIDE AIR FAN.
2. ( ) DENOTES CORNER WEIGHT.
3. ROOF OPENING MUST BE 2" SMALLER THAN CURB DIMENSIONS IN BOTH DIRECTIONS.

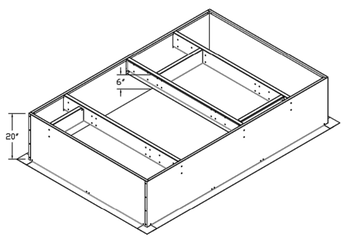
*NOTE: SUPPLY DUCT MUST BE INSTALLED TO MEET SMACNA STANDARDS. A MINIMUM STRAIGHT DUCT LENGTH MUST BE MAINTAINED DOWNSTREAM OF UNIT DISCHARGE AS OUTLINED IN AMCA PUBLICATION 201. WHEN USING RECTANGULAR DUCTWORK, ELBOWS MUST BE RADIUS THROAT, RADIUS BACK WITH TURNING VANES. FLEXIBLE DUCTWORK AND SQUARE THROAT/SQUARE BACK ELBOWS SHOULD NOT BE USED. ANY TRANSITION AND/OR TURNS IN THE DUCTWORK WILL CAUSE SYSTEM EFFECT. SYSTEM EFFECT WILL DRASTICALLY INCREASE STATIC PRESSURE AND REDUCE AIRFLOW. DO NOT RELY ON UNIT TO SUPPORT DUCT IN ANY WAY. FAILURE TO PROPERLY SIZE DUCTWORK MAY CAUSE SYSTEM EFFECTS AND REDUCE PERFORMANCE OF THE EQUIPMENT.
SUGGESTED STRAIGHT DUCT SIZE IS 25" x 14".

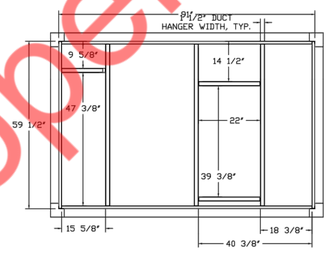












ATTENTION ALL BIDDING CONTRACTORS:

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RTU-1 and EF-1 & EF-3 SEQUENCE OF OPERATIONS:

RTU-1 will be supplied with a spare exhaust fan contactor. This contactor should be used to interlock EF-1 & EF-3. The interlock will require the line voltage for the fan to be ran through this contactor prior to landing on the EF-1 & EF-3 factory supplied disconnect.

RTU-1 will use it's on board scheduling to control EF-1 & EF-3 on/off based on occupied hours set by the owner.

During occupied hours, RTU-1 will be in it's max outside air position. During unoccupied hours EF-1 & EF-3 will be turned off, and RTU-1 will modulate to its minimum outside air position to maintain building pressurization/make-up air for the pool room.

RTU-1 blower shall remain on at all times, and will modulate heating, cooling, and dehumidification based on either space or intake temperature/humidity set points defined by the owner.

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DOAS SCHEDULE AND NOTES

M-15

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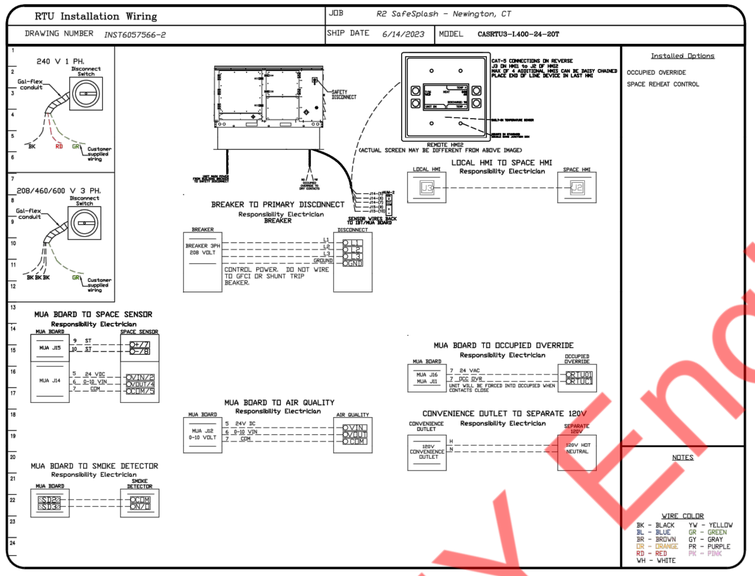

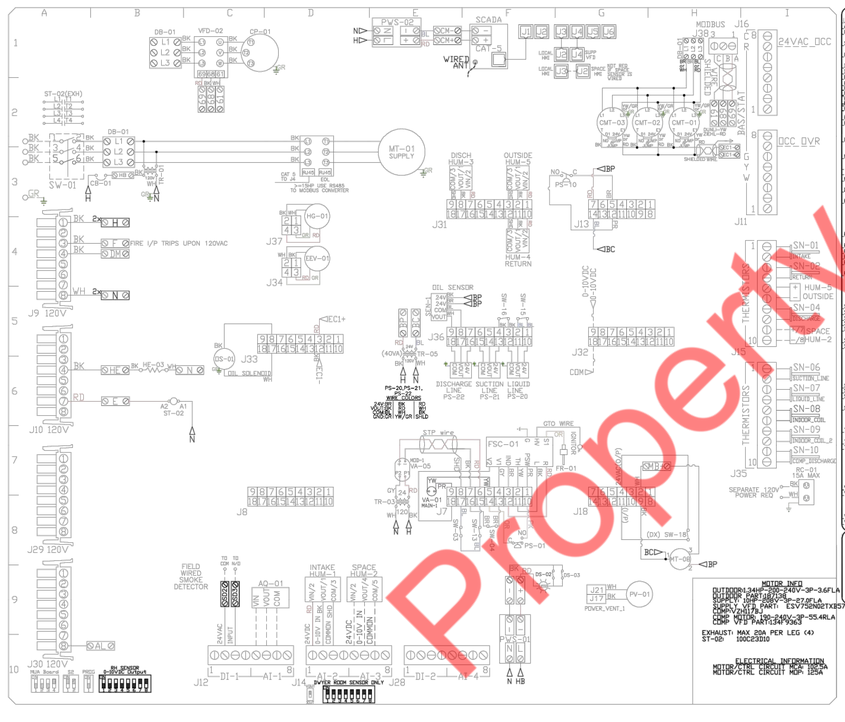

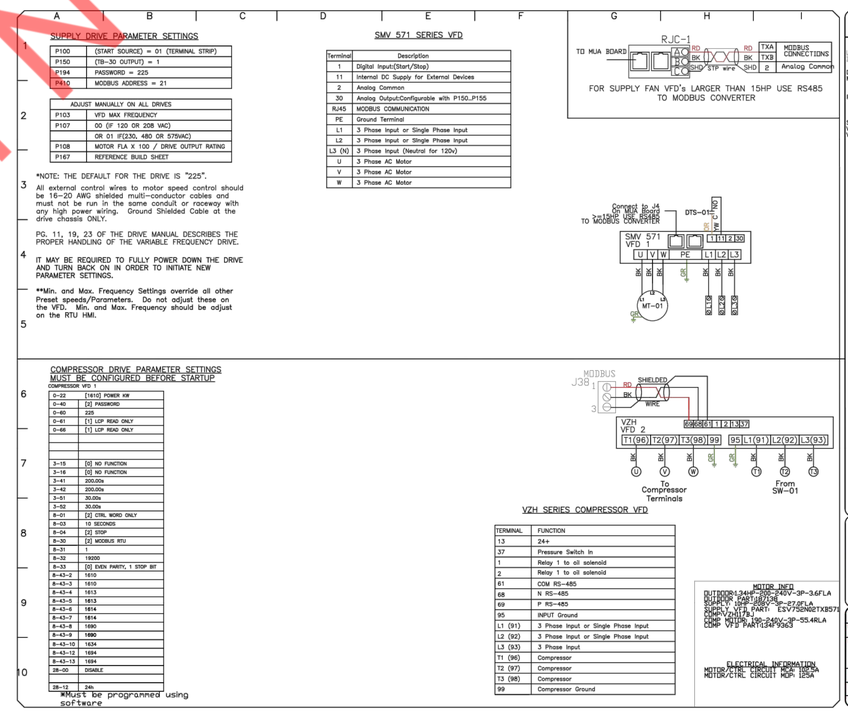

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SHEET NO. 10

DOAS SCHEDULE AND NOTES

M-16

ELECTRICAL PLAN NOTES

1 GENERAL REQUIREMENTS

THE GENERAL PROVISIONS OF THE CONTRACT INCLUDING ANY GENERAL AND SUPPLEMENTAL CONDITIONS AND GENERAL REQUIREMENTS
APPLY TO THE WORK IN THIS SECTION BEFORE SUBMITTING A BID, EXAMINE ALL MECHANICAL, ARCHITECTURAL, AND/OR STRUCTURAL DOCUMENTS, VISIT THE SITE AND GET ACQUAINTED WITH ALL CONDITIONS THAT MAY IN ANY WAY WHATSOEVER AFFECT THE EXECUTION OF THIS CONTRACT TAKE MEASUREMENTS AND BE RESPONSIBLE FOR EXACT SIZE AND LOCATIONS OF ALL OPENINGS REQUIRED FOR THE INSTALLATION OF WORK FIGURED DIMENSIONS ARE REASONABLY ACCURATE AND SHOULD GOVERN IN SETTING OUTWORK WHERE DETAILED METHOD OF INSTALLATION IS NOT INDICATED OR WHERE VARIATIONS EXIST BETWEEN DESCRIBED WORK AND APPROVED PRACTICE, DIRECTION OF THE OWNER'S REPRESENTATIVE ON JOB SITE SHALL BE FOLLOWED.

THE CONTRACT INCLUDES ALL ITEMS OF MATERIAL AND LABOR REQUIRED FOR THE COMPLETE INSTALLATION AND FULL OPERATION OF THE ELECTRICAL WORK AS SHOWN ON THE DRAWINGS AND HEREINAFTER SPECIFIED ALL WORK, MATERIALS, AND EQUIPMENT SHALL HAVE A ONE YEAR WARRANTY AFTER ACCEPTANCE OF THE WORK BY THE OWNER ANY DEFECTIVE ITEMS SHALL BE REMOVED AND REPLACED AT THE ELECTRICAL SUB-CONTRACTOR'S EXPENSE AND TO THE SATISFACTION OF THE ENGINEER.

PERFORM WORK UNDER THIS CONTRACT IN CLOSE HARMONY WITH OTHER CONTRACTORS SO COMPLETED WORK SHALL PRESENT A NEAT AND WORKMANLIKE INSTALLATION EXPOSED FINISHED MATERIALS AND EQUIPMENT SHALL BE CAREFULLY CLEANED AND WIPED TO REMOVE GREASE, SMUDGES, DUST AND OTHER SPOTS AND LEFT SMOOTH AND CLEAN DURING THE PROGRESS OF THE WORK, THE ELECTRICAL SUB-CONTRACTOR SHALL CAREFULLY CLEAN UP AFTER HIS MEN AND SHALL LEAVE THE PREMISES AND ALL PORTIONS OF THE BUILDING IN WHICH HE IS WORKING FREE OF DEBRIS AND IN A CLEANN AND SAFE CONDITION.

TIGHTEN ELECTRICAL CONNECTORS AND TERMINALS, INCLUDING SCREWS AND BOLTS, IN ACCORDANCE WITH EQUIPMENT MANUFACTURER'S PUBLISHED TORQUE TIGHTENING VALUES FOR EQUIPMENT CONNECTORS WHERE MANUFACTURER'S TORQUING REQUIREMENTS ARE NOT INDICATED, TIGHTEN CONNECTORS AND TERMINALS TO COMPLY WITH TIGHTENING TORQUES SPECIFIED IN APPLICABLE UL AND NEC STANDARDS.

WHENEVER THE WORDS "CONTRACTOR", "THIS CONTRACTOR", ETC APPEAR ON DRAWINGS OR IN THESE SPECIFICATIONS FOR THE ELECTRICAL WORK, IT SHALL REFER TO THE ELECTRICAL SUB-CONTRACTOR WHENEVER THE WORD "PROVIDE" APPEARS IN THESE DOCUMENTS, IT SHALL BE INTERPRETED TO MEAN "FURNISH & INSTALL".

OUTLET MOUNTING HEIGHTS AS INDICATED ON THE PLANS ARE APPROXIMATE TO BE USED FOR BIDDING PURPOSES ONLY THE EXACT MOUNTING HEIGHT OF OUTLETS SHALL BE DETERMINED IN THE FIELD WITH RELATION TO ARCHITECTURAL DETAILS AND EQUIPMENT BEING SERVED IT SHALL BE THE RESPONSIBILITY OF THIS CONTRACTOR TO COORDINATE OUTLET LOCATION WITH EQUIPMENT THE OWNER'S REPRESENTATIVE SHALL BE PERMITTED TO RELOCATE ANY OUTLET PRIOR TO INSTALLATION WITHIN A 15 FOOT LIMIT AT NO ADDITIONAL CHARGE IN CONTRACT PRICE ALL FASTENERS, HANGERS AND METHODS OF HANGING EXPOSED WORK IN FINISHED AREAS SHALL BE SUBMITTED TO THE OWNER'S REPRESENTATIVE FOR APPROVAL BEFORE INSTALLATION IF DURING CONSTRUCTION IF BECOMES APPARENT THAT CERTAIN MINOR CHANGES IN LAYOUT WILL EFFECT NEATER JOB OR BETTER ARRANGEMENT, SUCH ALTERATIONS SHALL BE MADE AS PART OF THE CONTRACT ENGINEER'S APPROVAL SHALL BE OBTAINED BEFORE MAKING SUCH CHANGES WORKMANSHIP THROUGHOUT SHALL CONFORM TO THE STANDARDS OF BEST PRACTICE MARKS, DENTS OR FINISH SCRATCHES WILL NOT BE PERMITTED ON ANY EXPOSED MATERIALS, FIXTURES OR FITTINGS INSIDE OF PANELS & EQUIPMENT BOXES SHALL BE LEFT CLEAN. THE SYSTEM SHALL RING ENTIRELY FREE FROM GROUND WHEN TESTED OUT IN THE PRESENCE OF THE OWNER'S REPRESENTATIVE THIS CONTRACTOR SHALL BE RESPONSIBLE FOR THE PROPER INSTRUCTION OF EACH SYSTEM TO THE SATISFACTION OF THE OWNER'S REPRESENTATIVE UPON COMPLETION OF THE JOB, THIS CONTRACTOR SHALL FURNISH THE OWNER WITH A COMPLETE SET OF OPERATING INSTRUCTIONS ON ALL ELECTRICAL SYSTEMS INSTALLED.

THE ELECTRICAL CONTRACTOR SHALL CONSULT THE PLANS OF ALL OTHER TRADES IN ALL INSTANCES BEFORE INSTALLING HIS WORK SO THAT HIS PIPING WILL NOT INTERFERE WITH THOSE BRANCHES IN THE EVENT OF A CONFLICT, THIS CONTRACTOR
SHALL REPORT TO THE OWNER' REPRESENTATIVE AT ONCE AND DO NO FURTHER WORK TO BE INSTALLED UNTIL A SATISFACTORY ARRANGEMENT IS DECIDED UPON ANY WOR DONE OR EQUIPMENT PLACED IN POSITION BY THIS CONTRACTOR, CREATING A CONFLICT IN VIOLATION HEREOF, SHALL BE READJUSTED TO THE SATISFACTION OF THE OWNER'S REPRESENTATIVE AT THE EXPENSE OF THE CONTRACTOR THE DECISION OF THE OWNER'S REPRESENTATIVE SHALL BE FINAL IN REGARD TO CHANGES DUE TO CONFLICTING CONDITIONS.

2 SHOP DRAWINGS

THE CONTRACTOR SHALL SUBMIT SHOP DRAWINGS ONLY FOR ITEMS OF MATERIAL AND EQUIPMENT DIFFERENT THEN THOSE ALREADY CALLED FOR WITHIN THESE DRAWINGS FOR APPROVAL BY THE ENGINEER THE CONTRACTOR IS NOT AUTHORIZED TO PURCHASE ANY MATERIAL UNTIL SUCH APPROVAL IS OBTAINED A MINIMUM OF SIX SEPARATE SETS OF DRAWINGS IS REQUIRED AND WILL BE DISTRIBUTED AS FOLLOWS: 1 COPY FOR ENGINEER'S FILE; 1 COPY FOR ARCHITECT'S FILE; 2 COPIES FOR THE OWNER'S FILE; 2 COPIES FOR THE CONTRACTOR SHOP DRAWINGS SHALL BE NEATLY BOUND IN A FLAT RING BINDER HAVING JOB NAME AND CONTRACTOR'S NAME ON COVER A SINGLE SUBMISSION IS PREFERRED HAVING ALL ITEMS INCLUDED LOOSE SHEET OR INCOMPLETE SUBMITTALS WILL NOT BE ACCEPTED ALL ITEMS OF MATERIAL TO BE SUPPLIED WHICH DO NOT REQUIRE SHOP DRAWING SUBMISSION SUCH AS CONDUIT, WIRE, BOXES, ETC , SHALL BE LISTED AS SEPARATE MATERIAL SHOWING
MANUFACTURER'S NAME AND CATALOG NUMBER AND TYPE AND SHALL BE INCLUDED WITH SHOP DRAWINGS SUBMITTAL.

3 RECORD DRAWINGS AND OPERATING INSTRUCTIONS & SERVICE MANUAL

TWO SETS OF MECHANICAL/ELECTRICAL DRAWINGS SHALL BE PROVIDED AS RECORD DRAWINGS WHICH SHALL BE SEPARATE, CLEAN, SEPIA REPRODUCIBLES RESERVED FOR THE PURPOSE OF SHOWING A COMPLETE PICTURE OF THE WORK AS ACTUALLY INSTALLED THESE DRAWING SHALL ALSO SERVE AS WORK PROGRESS REPORT SHEETS AND THE ELECTRICAL SUB-CONTRACTOR SHALL MAKE ANY NOTATIONS, NEAT AND LEGIBLE THEREON DAILY AS WORK PROCEEDS THE DRAWINGS SHALL BE AVAILABLE FOR INSPECTION AT ALL TIMES AND SHALL BE KEPT AT THE JOB AT A LOCATION DESIGNATED BY THE OWNER'S REPRESENTATIVE AT THE COMPLETION OF THE WORK, THESE RECORD DRAWINGS SHALL BE SIGNED BY THE ELECTRICAL SUB-CONTRACTOR, DATED AND RETURNED TO THE OWNER'S REPRESENTATIVE FINAL PAYMENT OF CONTRACT WILL NOT BE MADE UNTIL RECEIPT AND REVIEW OF SAID DRAWINGS PROVIDE TWO NEATLY BOUND (WITH TABBED SECTIONS) COPIES OF MAINTENANCE AND INSTRUCTION BOOKS, PARTS LIST PERTAINING TO ALL EQUIPMENT FURNISHED SUBMIT TO THE OWNER'S REPRESENTATIVE FOR APPROVAL FINAL PAYMENT WILL NOT BE MADE UNTIL DRAWINGS FOR RECORD, MAINTENANCE AND INSTRUCTION MANUALS ARE DELIVERED TO THE OWNER'S REPRESENTATIVE.

4 PERMITS AND REGULATIONS

THE LATEST EDITION OF THE NATIONAL ELECTRIC CODE SHALL BE THE MINIMUM REQUIREMENT FOR ALL WORK CONTRACTOR SHALL PAY PARTICULAR ATTENTION TO REQUIREMENTS OF NEC ARTICLE 680, PERTAINING TO POOLS AND POOL EQUIPMENT IN ADDITION TO ALL OTHER NEC REQUIREMENTS. ALL ELECTRICAL MATERIALS USED IN THIS WORK AND ALL WORKMANSHIP AND TESTS PERFORMED THEREIN, UNLESS SPECIFICALLY SPECIFIED SHALL CONFORM TO THE LATEST RULES AND REGULATIONS AND SPECIFICATIONS OF THE NATIONAL BOARD OF FIRE UNDERWRITERS, LOCAL AND STATE CODES AND AUTHORITIES HAVING JURISDICTION AND UTILITY COMPANY. EXAMINE THE DRAWINGS AND SPECIFICATIONS FOR COMPLIANCE WITH PREVAILING CODES, REGULATIONS AND ORDINANCES AND BASE BID AND WORK ACCORDINGLY. ANY MINOR DISCREPANCY BETWEEN THESE DRAWINGS/SPECIFICATIONS AND CODES, LAWS, ORDINANCES, RULES AND REGULATIONS SHALL BE CORRECTED BY THIS CONTRACTOR AS REQUIRED WITHOUT ANY ADDITIONAL REIMBURSEMENT. MAJOR DISCREPANCIES SHALL IMMEDIATELY BE BROUGHT TO THE ATTENTION OF THE ENGINEER (IN WRITING),PRIOR TO INSTALLATION ALONG WITH THE CONTRACTOR'S PROPOSED COST FOR CORRECTION THIS CONTRACTOR SHALL OBTAIN AND PAY FOR ALL PERMITS OR CERTIFICATES OF INSPECTION AND APPROVAL REQUIRED FOR THIS BRANCH OF THE WORK OWNER SHALL BE FURNISHED WITH CERTIFICATES OF FINAL INSPECTION AND APPROVAL PRIOR TO FINAL ACCEPTANCE OF THIS BRANCH OF THE WORK.

5 DRAWINGS AND SPECIFICATIONS

THE SPECIFICATIONS AND ACCOMPANYING DRAWINGS ARE INTENDED TO DESCRIBE THE SCOPE OF ALL ELECTRIC/MECHANICAL WORK. THE DRAWINGS ARE AN OUTLINE TO INDICATE THE APPROXIMATE LOCATION AND ARRANGEMENT OF RACEWAYS,
WIRING AND EQUIPMENT. THE DRAWINGS SHALL BE FOLLOWED AS CLOSELY AS POSSIBLE IN EXECUTING OF THE WORK. SHOULD THERE BE A CONFLICT BETWEEN DRAWINGS AND SPECIFICATIONS, THIS CONTRACTOR SHALL REFER THE MATTER TO THE OWNER'S REPRESENTATIVE FOR A DECISION AS TO METHOD OR MATERIAL. ELECTRICAL CONTRACTOR SHALL REFER TO DRAWINGS OF ALL OTHER TRADES FOR DETAILS, DIMENSIONS AND LOCATIONS OF OTHER WORK AND ROUTE HIS WORK SO
AS NOT TO CONFLICT WITH ANY OTHER BRANCH. THIS CONTRACTOR SHALL BE RESPONSIBLE FOR CHECKING QUANTITIES OF EQUIPMENT MENTIONED IN THE SPECIFICATIONS WITH THOSE SHOWN ON SHOWNS ON THE DRAWINGS. IF DISCREPANCIES ARE NOTED, PROVIDE THE GREATER OF THE QUANTITIES OR THE BETTER OF THE QUALITIES AS QUALITIES AS APPLICABLE.

6 MATERIALS AND EQUIPMENT

ALL MATERIALS AND EQUIPMENT SHALL BE NEW ALL MATERIALS, APPARATUS AND EQUIPMENT SHALL BEAR THE UNDERWRITER'S LABORATORIES INC , LABEL WHERE REGULARLY SUPPLIED CERTAIN MANUFACTURERS OF MATERIAL AND EQUIPMENT ARE SPECIFIED AND PLANS ARE DETAILED ACCORDING TO THIS MATERIAL THIS CONTRACTOR SHALL BASE HIS BID ON FURNISHING AND INSTALLING THIS MAKE OF MATERIAL AND EQUIPMENT WHERE MORE THAN ONE MAKE OF MATERIAL OR EQUIPMENT IS SPECIFIED, THE CONTRACTOR SHALL STATE IN HIS BID WHICH MAKE HE PROPOSES TO FURNISH.

7 ELECTRICAL IDENTIFICATION

PROVIDE MANUFACTURER'S STANDARD SELF-ADHESIVE VINYL TAPE NOT LESS THAN 3 MILS THICK BY 1-1/2" WIDE WHERE APPLICABLE, INSTALL ON ALL CONCEALED RACEWAYS AT CONNECTION TO ALL JUNCTION BOXES, PULL BOXES, EQUIPMENT,
WALL/FLOOR/, ETC UNLESS OTHERWISE INDICATED OR REQUIRED BY GOVERNING REGULATIONS, PROVIDE ORANGE TAPE WITH BLACK LETTERS.

PROVIDE CIRCUIT IDENTIFICATION BANDS FOR ALL CABLES AND CONDUCTORS PROVIDE MANUFACTURER'S STANDARD COLOR CODING FOR CABLE CONDUCTOR JACKET AND/OR INSULATION FOR ALL CABLES AND CONDUCTORS OF ALL SYSTEMS
MATCH IDENTIFICATION WITH MARKING SYSTEM USED IN EXISTING SYSTEMS (WHERE APPLICABLE), SHOP DRAWINGS, CONTRACT DOCUMENTS, AND SIMILAR PREVIOUSLY ESTABLISHED IDENTIFICATION FOR PROJECT'S ELECTRICAL WORK PROVIDE ON ALL CONDUCTORS OF ALL SYSTEMS INSTALL ENGRAVED PLASTIC-LAMINATE SIGN ON MAJOR UNITS OF ELECTRICAL EQUIPMENT, INCLUDING CENTRAL OR MASTER UNIT OF EACH ELECTRICAL SYSTEM INCLUDING COMMUNICATION/CONTROL/SIGNAL SYSTEMS, UNLESS UNIT IS SPECIFIED WITH ITS OWN SELF-EXPLANATORY IDENTIFICATION OR SIGNAL SYSTEM EXCEPT AS OTHERWISE INDICATED, PROVIDE SINGLE LINE OF TEXT, 1/2" HIGH LETTERING, ON 1-1/2" HIGH SIGN (2" HIGH WHERE 2 LINES ARE REQUIRED), WHITE LETTERING IN BLACK FIELD UNLESS DETERMINED OTHERWISE IN FIELD, PROVIDE TEXT MATCHING TERMINOLOGY AND NUMBERING OF THE CONTRACT DOCUMENTS AND SHOP DRAWINGS SECURE TO SUBSTRATE WITH FASTENERS, EXCEPT USE ADHESIVE WHERE FASTENERS SHOULD NOT OR CANNOT PENETRATE SUBSTRATE AS A MINIMUM PROVIDE SIGNS FOR EACH UNIT OF THE FOLLOWING CATEGORIES OF ELECTRICAL WORK WHERE SUCH WORK EXISTS ON THE PROJECT ALL STARTERS AND DISCONNECTS; ALL REMOTE FIXTURE OR EQUIPMENT SWITCHING DEVICES (VIA ENGRAVED WALL PLATES); ALL SYSTEM DEVICES, PORTS, TAPS, J.B.'S, P.B.S, ETC; PANEL BOARDS, ELECTRICAL CABINETS; ANY OTHER EQUIPMENT DESIGNATED BY OWNER OR ENGINEER IN FIELD.

ALL EQUIPMENT & SYSTEM IDENTIFICATION NOMENCLATURE SHOWN ON DRAWINGS OR LISTED HEREIN IS SHOWN FOR GENERAL DESIGN AND INSTALLATION REFERENCE ONLY THE ACTUAL NAMEPLATE, ETC NOMENCLATURE FOR THIS PROJECT SHALL BE VERIFIED BY ELECTRICAL CONTRACTOR IN FIELD PRIOR TO FABRICATION AND WHERE APPLICABLE, SHALL BE AN EXTENSION OF EXISTING NOMENCLATURE USED ON THE SITE AS DETERMINED IN FIELD BY ELECTRICAL CONTRACTOR.

IN ADDITION TO THE ABOVE, ALL LABEUING FOR ALL ELECTRICAL WIRING WORK (FOR ALL SYSTEMS) SHALL BE 3M DCI NO 054007-11954 "SWD" WRITE-ON TAPE DISPENSER KIT WITH FACTORY PROVIDED SPECIAL FAST DRYING MARKER INCLUDED WITH
KIT ALL MARKINGS SHALL BE CLEAR AND LEGIBLE.

AS DETERMINED IN FIELD, PROVIDE COLOR CODING FOR JUNCTION BOXES, PULL BOXES AND ASSOCIATED PLATES TO MATCH EXISTING BUILDING STANDARDS THE FOLLOWING INSULATION COLOR CODE SHALL BE USED FOR SYSTEM AND VOLTAGE IDENTIFICATION FOR FEEDER AND BRANCH CIRCUIT WIRING.

120/208V SYSTEM - BLACK, RED, BLUE & GRAY (NEUTRAL)
EQUIPMENT GROUNDING - GREEN
SYSTEMS - TO MATCH EXISTING - VERIFY IN FIELD

8 GROUNDING

ALL METALLIC CONDUIT, SURFACE WIREWAYS, SUPPORTS, CABINET AND EQUIPMENT SHALL BE GROUNDED IN ACCORDANCE WITH THE LATEST ISSUE OF THE NATIONAL ELECTRICAL CODE AND AS SHOWN ON PLANS THE GROUND TERMINALS OF
RECEPTACLES SHALL BE CONNECTED TO THE EQUIPMENT GROUND BUS OF THE SOURCE BRANCH CIRCUIT PANELBOARD ALL GROUNDING CONDUCTORS SHALL BE PROTECTED FROM MECHANICAL INJURY ALL CONNECTIONS TO EQUIPMENT OR CONDUIT SHALL BE MADE WITH AN APPROVED CONDUCTOR AND SAME SHALL BE BOLTED OR CLAMPE TO EQUIPMENT AND CONDUIT ALL CONTACT SURFACES SHALL BE THOROUGHLY CLEANED AND BRIGHT BEFORE CONNECTIONS TO INSURE A GOOD METAL CONTACT.

ALL NEW FEEDERS AND BRANCH CIRCUITING INSTALLED UNDER THIS CONTRACT SHALL BE PROVIDED WITH EQUIPMENT GROUNDING CONDUCTORS SIZED AND INSTALLED IN ACCORDANCE WITH LATEST ISSUE OF THE NATIONAL ELECTRICAL CODE ARTICLE 250 AND AS GROUNDING PER NEC ARTICLE 680 TO BE PROVIDED BY THIS CONTRACTOR.

9 CONDUIT AND FITTINGS

ALL WIRING FOR DIFFERENT POWER VOLTAGES SHALL BE INSTALLED IN RACEWAY SYSTEMS SEPARATE FROM EACH OTHER (I.E. 24V SEPARATE FROM 120/208V). ONLY VOICE AND DATA CABLES MAY SHARE RACEWAYS.

ALL WIRING SHALL BE RUN IN CONDUIT.THIN WALL EMT CONDUIT SHALL BE USED, SIZES 1/2 " (MINIMUM) THROUGH 2-1/2" ALL CONDUITS LARGER THAN 2-1/2" SHALL BE HEAVY WALL. CONDUITS INSTALLED UNDERGROUND OR IN CONCRETE SLABS SHALL BE PVC JACKETED FLEXIBLE STEEL CONDUIT. SEALTITE SHALL BE USED IN WET AREAS AND ON ALL MOTORIZED EQUIPMENT. FLEXIBLE CONDUIT MAY ONLY BE USED FOR FINAL CONNECTIONS, NO BX, ROMEX, ARMORED CABLE, ETC SHALL BE ALLOWED ALL VISIBLE CONDUIT SHALL BE RIGID ALL FITTINGS FOR SAME SHALL BE SET SCREW TYPE STEEL, WITH INSULATED THROATS ALL WIRING OF ALL SYSTEMS SHALL BE INSTALLED IN CONDUIT UNLESS SPECIFICALLY INDICATED OTHERWISE HEREIN OR ON DRAWINGS.

EXPOSED CONDUIT SHALL BE SECURELY SUPPORTED IN PLACE PER CODE BUT ON A MAXIMUM OF 10 FOOT INTERVALS, WITHIN THREE FEET OF EACH BEND, AT EVERY OUTLET OR JUNCTION BOX AND AT THE END OF EACH STRAIGHT RUN TERMINATING AT A BOX OR CABINET CONDUIT SHALL NOT BE SUPPORTED FROM DUCTWORK OR PIPE WORK CONDUITS SHALL BE RUN PARALLEL TO AND AT SO AS TO AVOID SUSPENDED LENGTHS OF CONDUIT CONDUIT SHALL BE INSTALLED AS TO BE ACCESSIBLE FOR REPLACEMENT AND RIGHT ANGLES TO THE BUILDING LINES GENERALLY, CONDUIT SHALL BE RUN IN CONTACT WITH STRUCTURAL PARTS OF THE BUILDING MAINTENANCE AND GENERALLY, CONDUIT SHALL BE INSTALLED TO PERMIT DRAINAGE.

CONDUIT RUNS EXCEEDING 100 FEET IN LENGTH OR HAVING IN EXCESS OF THREE 90 DEGREE TURNS SHALL BE PROVIDED WITH
PULL BOXES. CONDUIT FILL SHALL NOT EXCEED 30 PERCENT ALL CONDUIT SYSTEMS (INCLUDING J.B.'S, P.B.'S, ETC) SHALL BE PERMANENTLY IDENTIFIED NEW BRANCH CIRCUIT HOME-RUN CONDUITS SHALL BE NO LARGER THAN 1-1/4" DIAMETER CONDUIT FILL SHALL NOT EXCEED NEC REQUIREMENTS.

CONDUIT SHALL BE CLEANED INSIDE BEFORE ANY WIRES ARE PULLED CONDUIT ENDS SHALL BE CAPPED AND PLUGGED WITH STANDARD
ACCESSORIES AS SOON AS CONDUIT HAS BEEN PERMANENTLY INSTALLED CONDUIT INSTALLED WITHOUT CONDUCTORS SHALL BE PROVIDED
WITH SWEEP BENDS AND BAULING WIRE FOR PULLING.

ALL JOINTS SHALL BE MADE TIGHT WITH WATERTIGHT COUPLINGS MATCHING CONDUIT AND ALL CORNERS SHALL BE MAKE WITH LONG RADIUS. THE ENDS OF ALL CONDUITS SHALL BE CUT SQUARE AND REAMED AND ALL JOINTS BROUGHT TO A SHOULDER.CONDUIT SHALL BE CONTINUOUS BETWEEN OUTLETS TO MAKE A COMPLETE INSTALLATION AND TO EFFECT A CONTINUOUS GROUND. SUITABLE
SUPPORTS AND FASTENING SHALL BE PROVIDED FOR CONDUIT.

CONDUIT SHALL BE SUPPORTED BY APPROVED STRAPS, FASTENERS AND HANGERS HANGERS SHALL BE SUSPENDED FROM RODSPERFORATED STRAPS WILL NOT BE ACCEPTABLE FASTENERS SHALL BE LEAD EXPANSION SHIELDS IN BLOCK OR CONCRETE,
TOGGLE BOLTS IN HOLLOW WALLS; MACHINE SCREWS ON METAL SURFACES AND WOOD SCREWS ON WOOD CONSTRUCTION ALL CONDUIT SHALL BE SUPPORTED INDEPENDENTLY FROM ALL OTHER BUILDING SYSTEMS AND SHALL BE SUPPORTED DIRECTLY FROM STRUCTURAL COMPONENTS.

PROVIDE SLEEVES FOR ALL FIRE WALL AND SMOKE PARTITION PENETRATIONS (SEALED ACCORDINGLY) ALL RACEWAYS SHALL BE ENTIRELY FREE OF PLASTER, MORTAR, WATER AND OTHER FOREIGN MATTER RACEWAYS INSTALLED UNDER THIS CONTRACT WITHOUT CONDUCTORS SHALL HAVE BALING WIRE LEFT IN RACEWAYS FROM OUTLET TO OUTLET FOR FUTURE PULLING OF CONDUCTORS RACEWAYS OPEN ENDS SHALL BE PLUGGED OR CAPPED IN AN APPROVED MANNER.

WHERE "FISHING" THROUGH EXISTING HOLLOW PARTITIONS IS MANDATORY, USE MINIMUM 3/4" "GREENFIELD" (STEEL) FOR LOW VOLTAGE CABLING AND METAL-CLAD/ARMORED CABLE (LISTED FOR USE IN HEALTH CARE FACILITIES) FOR POWER OTHERWISE TYPE MC/AC CABLE MAY ONLY BE USED FOR 6' FIXTURE WHIPS, UNLESS CASE-BY-CASE PERMISSION IS GRANTED BY ENGINEER AND OWNER.

10 METHOD OF WIRING - POWER

IT IS PREFERRED A SEPARATE NEUTRAL BE USED WHEN POSSIBLE PER THE NEC, IF A NEUTRAL IS SHARED, ALL UNGROUNDED CONDUCTORS OF A MULTIWIRE BRANCH CIRCUIT MUST BE SIMULTANEOUSLY DISCONNECTED TO REDUCE THE RISK OF SHOCK TO
PERSONNEL WORKING ON EQUIPMENT SUPPLIED BY A MULTIWIRE BRANCH CIRCUIT. FOR A SINGLE PHASE INSTALLATION, THE SIMULTANEOUS DISCONNECTION CAN BE ACHIEVED BY TWO SINGLE POLE CIRCUIT BREAKERS WITH AN IDENTIFIED HANDLE TIE OR BY A 2-POLE SWITCH OR CIRCUIT BREAKER FOR A 3-PHASE INSTALLATION, A 3-POLE CIRCUIT BREAKER OR THREE SINGLE POLE CIRCUIT BREAKERS WITH AN IDENTIFIED HANDLE TIE PROVIDES THE REQUIRED SIMULTANEOUS DISCONNECTION OF THE GROUNDED CONDUCTORS. WHERE FUSES ARE USED FOR BRANCH CIRCUIT OVERCURRENT PROTECTION, A 2-POLE OR 3-POLE SWITCH IS REQUIRED.

NEATLY DRESS ALL WORK INSTALL ALL WORK PARALLEL AND PERPENDICULAR TO SURFACES OR EXPOSED STRUCTURAL MEMBERS, AN FOLLOW SURFACE CONTOURS, WHERE POSSIBLE KEEP CONDUCTOR SPLICES TO MINIMUM INSTALL SPLICE
AND TAP CONNECTORS WHICH POSSESS EQUIVALENT OR BETTER MECHANICAL STRENGTH AND INSULATION RATING THAN CONDUCTORS BEING SPLICED USE SPLICE AND TAP CONNECTORS WHICH ARE COMPATIBLE WITH CONDUCTOR MATERIAL INCREASE ALL
WIRES SHALL BE RUN CONTINUOUS FROM OUTLET TO OUTLET/FIXTURE TO FIXTURE INSULATION VALUE OF JOINTS TO BE 100% IN EXCESS OF WIRE PROVIDE ADEQUATE LENGTH OF CONDUCTORS WITHIN ELECTRICAL ENCLOSURES AND TRAIN THE CONDUCTORS TO TERMINAL POINTS WITH NO EXCESS BUNDLE MULTIPLE CONDUCTORS, WITH CONDUCTORS LARGER THAN NO 10 AWG CABLED IN INDIVIDUAL CIRCUITS MAKE TERMINATIONS SO THERE IS NO BARE CONDUCTOR AT THE TERMINAL.

BRANCH SUBFEEDER CIRCUITS SHALL BE INSTALLED AS SHOWN ON THE FLOOR PLANS WHERE OUTLETS ARE INDICATED BY LETTERS ON PLANS, THEY SHALL BE CONTROLLED BY CORRESPONDING SWITCHES NO WIRE SIZE SMALLER THAN NO 12 SHALL
BE USED FOR ANY BRANCH CIRCUIT UNLESS OTHERWISE NOTED ON PLANS FOR CONTROL CIRCUITS LARGER SIZES SHALL BE USED WHERE REQUIRED AND/OR INDICATED ON THE PLANS DISTANCES FROM PANEL TO FIRST OUTLET OF A 15 OR 20 AMPERE BRANCH
CIRCUIT SHALL REQUIRED THE FOLLOWING MINIMUM WIRE SIZE TO THE FIRST OUTLET.

UP TO 100 FEET: #12
100 TO 200 FEET: #10
MORE THAN 200 FEET: #8

ALL BRANCH CIRCUITS MORE THAN 200 FEET IN LENGTH SHALL BE MINIMUM NO 10 TO THE LAST OUTLET CONTROL CIRCUITS SHALL BE NO 14 EXCEPT FOR RUNS EXCEEDING 300 FEET WHERE THEY SHALL BE NO 12 OUTLETS SHALL BE LOCATED APPROXIMATELY AS SHOWN ON THE PLANS AND SHALL BE WIRED TO PROVIDE CONTROL OUTLETS INDICATED. ALL WIRES OF ANY ONE CIRCUIT SHALL BE RUN IN THE SAME CONDUIT.

ALL WIRES SHALL BE RUN CONTINUOUS FROM OUTLET TO OUTLET INSULATION VALUE OF JOINTS TO BE 100% IN EXCESS OF WIRE MECHANICAL WIRE SPLICERS SHALL BE SCOTCHLOCK INSULATED TYPE, T&B STAKON OR APPROVED EQUAL THE CONDUCTOR TERMINATING AT EACH WIRED OUTLET SHALL BE LEFT NOT LESS THAN 8" LONG AT THEIR OUTLET FITTINGS TO FACILITATE INSTALLMENT OF DEVICES OF FIXTURES FRICTION AND RUBBER TAPE CONFORM TO FEDERAL SPECIFICATIONS HH-T-11 AND HH-T-111. PLASTIC ELECTRICAL TAPE SHALL BE SCOTCH #33+ OR APPROVED EQUAL.

TYPE MC CABLE SHALL BE FORMED FROM CONTINUOUS LENGTH OF SPIRALLY WOUND, INTERLOCKED ZINC-COATED OR GALVANIZED (INSIDE & OUTSIDE) STRIP STEEL ALL CONDUCTORS SHALL BE RATED FOR 90 DEG C MINIMUM PROVIDE WITH FULL PARITY
SIZED GREEN INSULATED EQUIPMENT GROUND CONDUCTOR PROVIDE COMPATIBLE STEEL FITTINGS WITH INTEGRAL RED PLASTIC INSULATED THROAT BUSHINGS, COMPLIANT WITH NEC 350-5 CABLES SHALL BE 90 DEG C RATED WITH ALL COMPONENTS AND FITTINGS LISTED FOR GROUNDING AND COMPLIANT WITH THE FOLLOWING.

a) UL STD4 AND UL STD 83
b) ANSI E119 AND E814
c) NEC ARTICLES 250 AND 333

TYPE MC CABLE MAY BE UTILIZED ONLY IF NEC APPROVED AND IF APPROVED BY LOCAL AUTHORITY HAVING JURISDICTION AND IF INCLUDED IN THE LIMITED APPLICATIONS DEFINED BELOW.

1) ALL NEW 15 OR 20 AMPERE BRANCH CIRCUIT WORK THIS SHALL APPLY ONLY UNDER ALL OF THE FOLLOWING CIRCUMSTANCES AND CONDITIONS.

2) ONLY WHERE CONCEALED (ALL EXPOSED WIRING SHALL BE INSTALLED IN CONDUIT).

3) ROUTE ALL CABLES PERPENDICULAR AND PARALLEL TO THE BUILDING ARCHITECTURAL LINES/SURFACES/STRUCTURAL MEMBERS, KEEPING OFFSETS TO A MINIMUM AND FOLLOWING SURFACE CONTOURS WHERE POSSIBLE. MAINTAIN A UNIFORM ELEVATION FOR ALL CABLE RUNS WHEREVER POSSIBLE. ALL CABLES SHALL BE SUPPORTED/ANCHORED AT MAXIMUM 4'-0" INTERVALS AND WITHIN 12" OF BOX OR OUTLET AND SHALL NOT SAG. INSTALL CABLES IN A MANNER THAT PREVENTS
OVERHEATING CABLES SHALL BE FASTENED DIRECTLY TO THE STRUCTURE USING FACTORY CLAMPS/CLIPS SPECIFICALLY DESIGNED FOR THE RESPECTIVE CABLE (CADDY OR EQUAL).

4) ONLY WHERE INSTALLED FOR NORMAL UTILITY CIRCUITS, ALL WIRING FOR EMERGENCY SYSTEM FEEDERS AND RECEPTACLE BRANCH CIRCUITS SHALL BE IN CONDUIT (EMT), NO EXCEPTIONS.

11 COMMUNICATION TECHNOLOGY SYSTEMS

GENERAL

VOICE AND DATA CABLES SHALL BE INSTALLED IN "J-HOOK" STYLE PATHWAY WHERE INDICATED ON DRAWINGS ALL OTHER WIRING/CABLES OF VOICE/DATA SYSTEMS AND ALL OTHER SYSTEMS SHALL BE INSTALLED IN CONDUIT, 3/4" MINIMUM VERIFY
ROUTE FOR "J-HOOK" WORK ABOVE CEILING IN FIELD IN ADVANCE WITH OWNER.

PROVIDE OUTLET BOXES AND CONDUIT STUBS FOR SYSTEMS AS INDICATED ON DRAWINGS CONDUIT STUBS SHALL BE TURNED OUT IN JOIST SPACE AND, WHERE LOCATED IN AREAS WITH DRYWALL CEILINGS, SHALL BE EXTENDED TO THE NEAREST AREA WITH NO CEILING OR WITH ACOUSTICAL TILE CEILING PROVIDE CONDUIT, BRIDLE RINGS AND RACEWAYS AS REQUIRED ALL CONDUITS SHALL BE PROVIDED WITH SWEEP "L" 90'S AND INSULATED THROAT FITTINGS (OR BUSHINGS).

TYPICAL OUTLETS SHALL CONSIST OF A FLUSH WALL MOUNTED 4" SQUARE X 2-1/8" DEEP BOX WITH A DOUBLE GANG PLASTER RING MAXIMUM CONDUIT FILL FOR NEW WORK SHALL BE 40%, BASED ON MANUFACTURE'S PUBLISHED DATA OF CABLE
OUTSIDE DIAMETER.

CABLE, TERMINATIONS, JACKS, LABELING, HARDWARE, SHALL BE PROVIDED BY A CERTIFIED COMMUNICATION TECHNOLOGY CONTRACTOR
CABLING SYSTEM SHALL BE PROVIDED AS REQUIRED FOR A TURNKEY, COMPLETE WORKING SYSTEMS.

DETERMINE EXACT LOCATIONS OF COMMUNICATION TECHNOLOGY EQUIPMENT, EQUIPMENT OUTLETS, ETC IN FIELD USE CAUTION NOT
TO EXCEED THE ALLOWED BENDING RADIUS FOR RESPECTIVE CABLES AND NOT TO COMPROMISE THE INTEGRITY OF THE CABLE DURING INSTALLATION BY PULLING TIE-WRAPS TOO TIGHTLY, DAMAGING CABLES, ETC RACEWAY/CABLING BENDING RADII SHALL BE MINIMUM AS DIRECTED BY CABLE MANUFACTURER USE PULLING COMPOUND OR LUBRICANT, WHERE NECESSARY; COMPOUND MUST NOT DETERIORATE CONDUC

ELECTRICAL PLAN NOTES

PANELBOARDS:

SUBJECT TO COMPLIANCE WITH REQUIREMENTS, PROVIDE PANELBOARD PRODUCTS OF THE FOLLOWING (FOR EACH TYPE AND RATING OF PANELBOARD AND ENCLOSURE): SQUARE D COMPANY.

PANELS SHALL BE DEAD FRONT, SAFETY TYPE, FURNISHED WITH BRANCH CIRCUIT PROTECTING DEVICES, EQUIPMENT GROUNDING BOX, MAIN BUS AND CABLE LUGS FACTORY ASSEMBLED, WITH ALL COMPONENTS IN PLACE, READY FOR INSTALLATION. CABINET SIZES ARE BASED UPON A 20" WIDE BY 6" DEEP PANEL UNLESS OTHERWISE NOTED PANELBOARDS SHALL BE EQUIPPED WITH FLUSH TYPE LOCK AND CATCH. ALL LOCKS SHALL BE KEYED ALIKE, AND TWO KEYS ARE TO BE SUPPLIED WITH EACH LOCK. PANELBOARDS SHALL BEAR UL LABELS FOR THEIR SPECIFIC APPLICATIONS. PANELBOARDS SHALL BE SUITABLE FOR SERVICE VOLTAGE WITH NUMBER OF BRANCH CIRCUITS OF CAPACITY SCHEDULED UNLESS OTHERWISE INDICATED, PANELBOARDS AND SECTIONS THEREOF, IF ANY, SHALL HAVE MAIN LUGS ONLY OF CAPACITY EQUAL TO OR GREATER THAN THE RATING OR SETTING OF THE OVER THE CURRENT PROTECTIVE DEVICE NEXT BACK ON THE LINE ALL CIRCUIT BREAKER PANELBOARD BUS ASSEMBLIES SHALL BE OF THE DISTRIBUTED (SEQUENCE) BUSSING TYPE THROUGHOUT, SO THAT ANY 2 ADJACENT SINGLE POLE BREAKERS AND/OR SPACES SHALL BE REPLACEABLE BY A 2 POLE INTERNAL COMMON TRIP BREAKER, AND ANY 3 ADJACENT SINGLE POLE BREAKERS AND OR SPACES SHALL BE REPLACEABLE BY A 3 POLE INTERNAL COMMON TRIP BREAKER, 15 AMP THROUGH 70 AMP INCLUSIVE, WITHOUT DISTURBING ANY OTHER BREAKER.ALL PANELBOARDS SHALL BE UL LISTED AND LABELED FOR USE AS SERVICE ENTRANCE EQUIPMENT WHERE BEING USED AS SUCH.

DISTRIBUTION PANELS SHALL BE SQUARE D I-LINE.

208Y/120V LIGHTING AND APPLIANCE PANELBOARDS SHALL BE EQUAL TO SQUARE D NQOD WITH BOLT-ON BRANCH BREAKERS.

ALL BUSSING SHALL BE COPPER CURRENT CARRYING CONTACT SURFACES SHALL BE SILVER OR TIN PLATED MAIN BUSES AND CONNECTORS SHALL BE HARD DRAWN COPPER OF 98% CONDUCTIVITY, WITH CURRENT CARRYING CAPACITY TO MAINTAIN ESTABLISHED RISE TESTS AS DEFINED IN UL STANDARD UL 67.

ALL BRANCH CIRCUIT BREAKERS SHALL BE FULL AMBIENT COMPENSATED THERMAL MAGNETIC MOLDED CASE WITH QUICK-MAKE AND QUICK-BREAK ACTION AND POSITIVE HANDLE TRIP INDICATION, BOTH ON MANUAL AND ON AUTOMATIC OPERATION BREAKERS SHALL BE OF THE OVER-THE-CENTER TOGGLE OPERATING TYPE WITH THE HANDLE GOING TO A POSITION BETWEEN "ON" AND "OFF" TO INDICATE AUTOMATIC TRIPPING.

ALL CIRCUIT BREAKERS SHALL BE FULL SIZE "TANDEM" OR "SPLIT" BREAKERS SHALL NOT BE PERMITTED ALL MULTI-POLE BREAKERS SHALL HAVE INTERNAL COMMON TRIP WITH ALL LOAD SIDE BOX LUGS OF ONE BREAKER IN THE SAME GUTTER ALL CIRCUIT BREAKERS SHALL HAVE SEALED CASES TO PREVENT TAMPERING ALL 15 AND 20 AMPERE BRANCH CIRCUIT BREAKERS SHALL BE UL LISTED AS SWD (SWITCHING DUTY). ALL 15-70 AMPERE BRANCH CIRCUIT BREAKERS SHALL BE HACR TYPE ALL GFI CIRCUIT BREAKERS SHALL BE UL CLASS A WITH MAXIMUM THRESHOLD OF 5 MA ALL BRANCH CIRCUIT BREAKERS SERVING ALL BALLASTED (FLUORESCENT/HID) LIGHTING LOADS SHALL BE HID RATED. PROVIDE 20 (+/-) NON-PADLOCK TYPE BREAKER LOCK-ON DEVICES AND INSTALL ON BRANCH BREAKERS AS DIRECTED IN FIELD (NIGHT LIGHTS, COMPUTERS, SECURITY, ETC.). PROVIDE DETAILED TYPEWRITTEN SCHEDULES FOR ALL PANELBOARDS CIRCUIT BREAKERS SHALL BE FURNISHED AS SCHEDULED ON THE DRAWINGS OR AS OTHERWISE REQUIRED BASED ON FIELD DETERMINATIONS.

PROVIDE ALL ELECTRICAL DISTRIBUTION RELATED EQUIPMENT WITH APPROPRIATELY BRACED BUSSING AND PROPERLY RATED BREAKERS, FUSES, ETC. FOR THE AVAILABLE FAULT CURRENTS.

IN EXISTING BUILDINGS WHERE FAULT CURRENT VALUES ARE NOT INDICATED ON DRAWINGS, COORDINATE WITH EXISTING "UPSTREAM" DISTRIBUTION EQUIPMENT PROVIDE EQUIPMENT AIC RATINGS TO MEET OR EXCEED SAME. FILL OUT PANELBOARD'S CIRCUIT DIRECTORY CARD UPON COMPLETION OF INSTALLATION WORK DIRECTORIES SHALL BE NEATLY TYPEWRITTEN ALL PANELBOARD DIRECTORIES SHALL INCLUDE THE ACTUAL ROOM NAMES/NUMBERS THAT ARE SELECTED FOR INTERIOR SIGNAGE/DESIGNATION.

EXISTING CONDITIONS NOTES

STOP AND READ

THE CONTRACTOR AND SUB-CONTRACTORS **SHALL NOT INITIATE ANY WORK UNTIL EXISTING FIELD CONDITIONS ARE PROPERLY VERIFIED.** THIS SHALL HOLD TRUE FOR FIRST GENERATION AND 2ND GENERATION SPACES. WHEN DEMOLITION IS REQUIRED, THAT WILL BE PERMITTED TO EXPOSE CONDITIONS. THESE VERIFICATIONS SHALL INCLUDE BUT NOT LIMITED TO: DIMENSIONS BOTH HORIZONTALLY AND VERTICAL, ELECTRICAL SERVICE /PANELS LOCATION AND VOLTS/PHASE, LOCATION/QTY OF ROOF MOUNTED HVAC EQUIPMENT, CONFIRM THAT INTERIOR HVAC HUNG UNITS HAVE PROPER SUPPORT CONNECTIONS FOR EXISTING STRUCTURE, FIRE SPRINKLER MAIN RUNS, TOILET ROOM DIMENSIONS, DOOR SWING FOR DOORS TO REMAIN AND ETC. IF NOT VERIFIED AND DISCOVERED AT A LATER TIME, THE CONTRACTOR SHALL REIMBURSE THE ARCHITECT FOR THE REDESIGN FEE. THIS DOES NOT INCLUDE HIDDEN WORK I.E. PITCH OF SANITARY LINES, ACTUAL CONDITIONS OF EXISTING HVAC EQUIPMENT, STRUCTURAL COLUMNS/BEARING WALLS OR CONDITIONS OF GREASE INTERCEPTORS AND ETC.

SCOPE OF WORK

1. NEW 600A, 120/208V, 3-PHASE, 4-WIRE ELECTRICAL SERVICE FROM THE UTILITY COMPANY FOR THE PROJECT SPACE.
2. PROVIDE NEW 600A, 120/208V, 3-PHASE, 4-WIRE ELECTRICAL METER AND CT CABINET.
3. PROVIDE NEW (1) 600A, 120/208V, 3-PHASE, 4-WIRE FUSED DISCONNECT SWITCH .
4. PROVIDE NEW (1) 600A(MCB), 120/208V, 3-PHASE, 4-WIRE ELECTRICAL PANEL "A ".
5. PROVIDE NEW (1) 125A(M.L.O.), 120/208V, 3-PHASE, 4-WIRE ELECTRICAL PANEL "B ".
6. PROVIDE NEW (1) 100A(M.L.O.), 120/208V, 3-PHASE, 4-WIRE ELECTRICAL PANEL "LSP"
7. ALL NECESSARY EQUIPMENT , WIRING AND LIGHTING AS SHOWN ON PLANS. COORDINATE WITH GC FOR ANY LOW VOLTAGE WORK NECESSARY.

GENERAL LIGHTING NOTES

A. UPPER CASE LETTER NEXT TO LIGHT FIXTURE DENOTES FIXTURE TYPE AND LOWER CASE LETTER DENOTES SWITCHING SCHEME.

B. ALL EMERGENCY FIXTURES SHALL BE CONNECTED TO AN UNSWITCHED HOT CONDUCTOR. SO THAT THEY ARE ENERGIZED ALL THE TIME.

ELECTRICAL NOTES

1. ELECTRICAL CONTRACTOR SHALL REVIEW ALL DRAWINGS OF THIS SET.
2. CONTRACTOR TO VERIFY THAT ALL EQUIPMENT SHOWN AS EXISTING MATCHES THE DESCRIPTIONS AND SPECIFICATIONS SHOWN ON DRAWINGS AND SCHEDULES. IF DIFFERENT, NOTIFY ARCHITECT/ENGINEER BEFORE BIDDING, ORDERING, OR PROCEEDING WITH WORK.
3. ELECTRICAL CONTRACTOR SHALL SUPPLY AND INSTALL ALL NEW ELECTRICAL WORK INDICATED. CONSTRUCTION SHALL BE IN ACCORDANCE WITH DRAWINGS AND APPLICABLE SPECIFICATIONS. IF A PROBLEM IS ENCOUNTERED IN COMPLYING WITH THIS REQUIREMENT, CONTRACTOR SHALL NOTIFY THE OWNER OR HIS REPRESENTATIVE AS SOON AS POSSIBLE AFTER DISCOVERY OF THE PROBLEM AND SHALL NOT PROCEED WITH THAT PORTION OF THE WORK UNTIL OWNER HAS DIRECTED CORRECTIVE ACTION TO BE TAKEN.
4. ELECTRICAL CONTRACTOR SHALL VISIT JOB SITE AND FAMILIARIZE HIMSELF WITH ALL CONDITIONS AFFECTING ELECTRICAL AND COMMUNICATIONS INSTALLATION AND MAKE PROVISIONS AS TO THE COST THEREOF. EXISTING CONDITIONS OF ELECTRICAL EQUIPMENT, LIGHT FIXTURES, ETC... THAT ARE PART OF THE FINAL SYSTEM SHALL BE VERIFIED BY THE CONTRACTOR PRIOR TO SUBMITTING HIS BID.
5. ALL WORK SHALL BE PERFORMED IN ACCORDANCE WITH THE 2020 EDITION OF THE NATIONAL ELECTRIC CODE AND ALL CODES AND ORDINANCES OF THE AUTHORITY HAVING JURISDICTION.
6. DO NOT SCALE THE ELECTRICAL DRAWINGS. REFER TO ARCHITECTURAL PLANS AND ELEVATIONS FOR EXACT LOCATION FOR ALL EQUIPMENT. CONFIRM WITH OWNER'S REPRESENTATIVE.
7. ALL ELECTRICAL NOT BEING REUSED MUST BE REMOVED IN ITS ENTIRETY.
8. ALL CONDUIT IN OR UNDERGROUND OR IN CONCRETE MUST BE RIGID GALVANIZED STEEL.
9. CIRCUIT BREAKERS AND PANELS TO BE BOLT ON TYPE
10. ALL EQUIPMENT SHALL BE APPROVED BY UL OR OTHER NATIONALLY RECOGNIZED TESTING COMPANY.
11. ALL RECEPTACLES SHALL BE GROUNDED AS REQUIRED BY NEC 250.146
12. SUBMIT SERVICE ENTRANCE EQUIPMENT FOR SEPARATE APPROVAL.
13. ALL LOW VOLTAGE MUST BE IN CONDUIT TO ABOVE THE DROP CEILING. BRIDAL RINGS OR "J" HOOKS REQUIRED.
14. SEPARATE PERMITS ARE REQUIRED FOR ALL LOW VOLTAGE SUCH AS TELEPHONE, DATA, THERMOSTAT, MUSIC, ALARMS ETC.
15. SEPARATE PERMIT REQUIRED FOR SIGNAGE.
16. PRIOR TO ANY CONSTRUCTION WORK BEGINNING AN ON-SITE MEETING WITH GENERAL CONTRACTORS IS REQUIRED.
17. ELECTRICIAN MUST BE ON SITE FOR ALL INSPECTIONS.
18. MINIMUM WIRE SIZE SHALL BE #12 A.W.G. EXCLUDING CONTROL WIRING. ALL CONDUCTORS SHALL BE COPPER AND UNLESS OTHERWISE NOTED THHN INSULATION.
19. OUTLET BOXES SHALL BE PRESSED STEEL IN DRY LOCATIONS, PLASTIC AND CAST ALLOY WITH THREADED HUBS IN WET OR DAMP LOCATIONS, AND SPECIAL ENCLOSURES FOR OTHER CLASSIFIED AREAS.
20. IT IS NOT THE INTENT OF THESE PLANS TO SHOW EVERY MINOR DETAIL OF CONSTRUCTION. THE CONTRACTOR IS EXPECTED TO FURNISH AND INSTALL ALL ITEMS FOR A COMPLETE ELECTRICAL SYSTEM AND PROVIDE ALL REQUIREMENTS NECESSARY FOR EQUIPMENT TO BE PLACED IN PROPER WORKING ORDER.
21. ELECTRICAL SYSTEM SHALL BE COMPLETE AND EFFECTIVELY GROUNDED AS REQUIRED BY THE N.E.C. OR LOCAL CODES.
22. ALL MATERIALS SHALL BE NEW AND BEAR UNDERWRITERS' LABELS WHERE APPLICABLE.
23. ALL WORK SHALL BE PERFORMED BY A LICENSED ELECTRICAL CONTRACTOR IN A FIRST CLASS WORKMANLIKE MANNER. THE COMPLETED SYSTEM SHALL BE FULLY OPERATIVE AND ACCEPTED BY ENGINEER/ARCHITECT.
24. ALL WORK SHALL BE COORDINATED WITH OTHER TRADES TO AVOID INTERFERENCE WITH THE PROGRESS OF CONSTRUCTION.
25. ELECTRICAL CONTRACTOR SHALL GUARANTEE ALL MATERIALS AND WORKMANSHIP FREE FROM DEFECTS FOR A PERIOD OF NOT LESS THAN ONE YEAR FROM DATE THAT CERTIFICATE OF OCCUPANCY IS ISSUED. WARRANTY SHALL BE PROVIDED IN WRITING. PROVIDE COPY TO LL.
26. CORRECTION OF ANY DEFECTS SHALL BE COMPLETED WITHOUT ADDITIONAL CHARGE AND SHALL INCLUDE REPLACEMENT OR REPAIR OF ANY OTHER PHASE OF THE INSTALLATION WHICH MAY HAVE BEEN DAMAGED THEREBY.
27. ALL REQUIRED INSURANCE SHALL BE PROVIDED FOR PROTECTION AGAINST PUBLIC LIABILITY AND PROPERTY DAMAGE FOR THE DURATION OF THE WORK.
28. CONTRACTOR SHALL PAY FOR ALL PERMITS, FEES, INSPECTIONS AND TESTING. CONTRACTOR TO OBTAIN PERMIT AND APPROVED SUBMITTALS PRIOR TO BEGINNING WORK OR ORDERING EQUIPMENT.
29. THE ELECTRICAL INSTALLATION SHALL MEET ALL STANDARD REQUIREMENTS OF POWER AND TELEPHONE COMPANIES.
30. CONTRACTOR SHALL COORDINATE WITH MECHANICAL DRAWINGS AND PROVIDE ALL NECESSARY CONTROL WIRING.
31. ALL CIRCUIT BREAKERS FEEDING MECHANICAL EQUIPMENT SHALL BE HACR TYPE CIRCUIT BREAKERS.
32. PROVIDE AND INSTALL CONDUIT, CONDUCTORS, PULL WIRES, BOXES, COVER PLATES, DEVICES, ETC. FOR ALL OUTLETS AS INDICATED.
33. MATERIALS, PRODUCTS, AND EQUIPMENT, INCLUDING ALL COMPONENTS THEREOF, SHALL BE NEW AND SUCH AS APPEAR ON THE UL LIST OF APPROVED ITEMS AND SHALL MEET OR EXCEED THE REQUIREMENTS OF N.E.C. NEMA, AND IECE.
34. CONTRACTOR SHALL SUBMIT SHOP DRAWINGS OR CUT SHEETS OF LIGHTING FIXTURES, SWITCHES, AND OTHER ELECTRICAL ITEMS FOR APPROVAL BY ENGINEER/ARCHITECT.
35. ELECTRICAL CONTRACTOR SHALL BE RESPONSIBLE FOR ALL CUTTING, PATCHING AND FIRED CAULKING REQUIRED OF HIS WORK.
36. ELECTRICAL CONTRACTOR SHALL LABEL ALL PANELS W/TYPE WRITTEN DIRECTORIES.
37. ALL ELECTRICAL OUTLETS SHALL BE AT 18" A.F.F. UNLESS NOTED OTHERWISE, AND VERTICALLY MOUNTED.
38. ALL LIGHT SWITCHES TO BE AT 48" A.F.F.
39. ALL ELECTRICAL WIRING SHALL BE THE RESPONSIBILITY OF THE ELECTRICAL CONTRACTOR. ALL ELECTRICAL WIRING FOR HVAC SYSTEM INCLUDING CONTROLS, THERMOSTATS, POWER, ETC. SHALL BE THE RESPONSIBILITY OF THE ELECTRICAL CONTRACTOR.
40. BREAKER AND PANELS – ALL CURRENT CARRYING BUSSES SHALL BE COPPER. ALL GROUND BUS BARS SHALL BE COPPER. PANEL BOARD ENCLOSURES SHALL BE FURNISHED WITHOUT PRE-PUNCHED CONCENTRIC HOLES. A.I.C. RATINGS SHALL BE AS INDICATED ON PANEL BOARD SCHEDULES.
41. DISCONNECT SWITCHES SHALL BE H.P. RATED, GENERAL DUTY, QUICK-MAKE, QUICK-BREAK ENCLOSURES AS REQUIRED BY EXPOSURE.
42. MOTOR STARTERS SHALL BE MANUAL OR MAGNETIC, WITH OVERLOAD RELAYS IN EACH HOT LEG.
43. THE TERM "PROVIDE" USED IN THE CONSTRUCTION DOCUMENTS AND SPECIFICATIONS INDICATES THE CONTRACT SHALL FURNISH AND INSTALL.
44. CONTRACTOR SHALL CONFIRM WITH ANY AND ALL REQUIREMENTS SUCH AS: LUG SIZE RESTRICTIONS, CONDUIT ENTRY, TRANSFORMER SIZE, SCHEDULED DOWN TIME FOR OWNERS CONFIRMATION, ETC. ANY CONFLICTS SHALL BE BROUGHT TO ATTENTION OF THE ENGINEER BEFORE PROCEEDING WITH ANY WORK.
45. VOLTAGE DROP FOR ALL BRANCH CONDUCTORS SHALL NOT EXCEED 3%. WHERE VOLTAGE DROP EXCEEDS 3%, CONTRACTOR SHALL INCREASE SIZE OF CONDUCTORS.
46. CONTRACTOR SHALL PROVIDE GFI TYPE BREAKER FOR ALL EXTERIOR 120V CIRCUITS OR GFI PROTECTION – FOR THE WHOLE CIRCUIT.
47. GAS PIPING SHALL BE BONDED.
48. ELECTRICAL CONTRACTOR SHALL COORDINATE SERVICE ENTRY WITH SERVICE PROVIDER PRIOR TO DETERMINING EXACT LOCATION OF THE METER BOX IN ORDER TO AVOID DISCREPANCIES BETWEEN DRAWINGS AND JOB CONDITIONS.
49. ALL OUTDOOR EQUIPMENT SHALL BE WEATHERPROOF.
50. CONSTRUCTION "AS BUILT" DRAWINGS AND DOCUMENTS SHALL BE PROVIDED TO THE OWNER WITHIN 30 DAYS AFTER THE DATE OF ACCEPTANCE. PROVIDE A COPY TO LL.
51. OPERATION MANUALS AND MAINTENANCE MANUALS SHALL BE PROVIDED TO THE BUILDING OWNER.
52. ABSOLUTELY NO FLEXIBLE CONDUIT IS PERMITTED IN DEMISING WALLS. FLEXIBLE CONDUIT IS PERMITTED FOR SHORT FINAL CONNECTIONS ONLY (6'-0" OR LESS).
53. EXPOSED CONDUIT SHALL BE INSTALLED IN STRAIGHT LINES, PARALLEL OR IN RIGHT ANGLES TO THE BUIDING STRUCTURE. DO NOT LOOP EXCESS FLEXIBLE CONDUIT IN CEILING SPACE OR WALL CAVITY. NO CONDUIT TO BE SUPPORTED FROM THE ROOF DECK.
54. CABLE TYPES AC AND NM CABLES ARE NOT ACCEPTABLE. TYPE MC CABLE, ELECTRIC METALLIC TUBING (EMT) AND RIGID GALVANIZED CONDUIT ARE PERMITTED.
55. ALL EQUIPMENT, DEVICES AND FIXTURES SHALL BE GROUNDED IN COMPLIANCE WITH NEC AND UL REQUIREMENTS.
56. ALL NEW PANELS TO BE UL LABELED WITH BOLT-ON TYPE CIRCUIT BREAKERS.
57. 7-DAY 24-HOUR TIME CLOCK IS REQUIRED TO CONTROL STOREFRONT ENTRY LIGHTS, SHOW WINDOW LIGHTS, SHOW WINDOW RECEPTACLES AND STOREFRONT SIGNAGE. ILLUMINATED STOREFRONT SIGNS MUST REMAIN LIT DURING ALL MALL BUSINESS HOURS.
58. TENANT IS REQUIRED TO MAKE A FIELD SURVEY OF THE EXISTING ELECTRICAL SERVICE TO ENSURE THAT THE TOTAL CONNECTED LOAD DOES NOT EXCEED THE ELECTRICAL SERVICE. ANY/ALL MODIFICATIONS OR UPGRADES NEEDED ARE SUBJECT TO LANDLORD'S PRIOR APPROVAL AND WILL BE COMPLETED BY TENANT/TENANT'S GC AT TENANT'S SOLE EXPENSE.
59. ALL ELECTRICAL PANELS TO BE MOUNTED ON PLYWOOD BACKER BOARD.
60. PANEL PHASE LOADS TO BE BALANCED WITHIN 10%.
61. ELECTRICAL PANELS MAY NOT BE RECESSED IN DEMISING PARTITIONS. SURFACE MOUNT OR FULL FUR OUT WALL TO ACHIEVE FLUSH FINAL APPEARANCE.
62. COORDINATE ALL CONCRETE TRENCHING/CORING TO ENSURE THAT ANY UNDER SLAB UTILITIES, ETC. ARE NOT DAMAGED DURING FLOOR CUT. ANY DAMAGE TO BE REPAIRED AT TENANT'S EXPENSE. PRIOR APPROVAL AND COORDINATION WITH PROPERTY MANAGEMENT IS REQUIRED FOR ALL CONCRETE CUTTING.

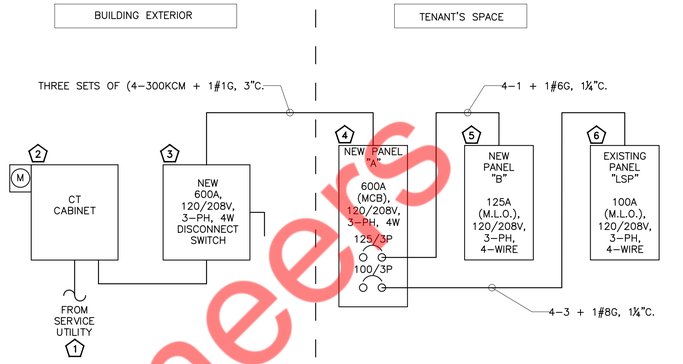
ELECTRICAL LEGEND

SYMBOL	DESCRIPTION
	EXHAUST FAN
	COMBINATION EXHAUST FAN/LIGHT (REFER TO MECHANICAL PLANS)
S	SPEAKERS @ CEILING
J	JUNCTION BOX
SD	CEILING MOUNTED SMOKE DETECTOR 110V., INTERCONNECTED W/ BATT. BACKUP. SMOKE DETECTOR SHALL COMPLY WITH NFPA 72, AND FBC 905.2.
	BATTERY BACK UP EXIT LIGHT
	BATTERY BACK UP EMERGENCY LIGHT
S	WALL SWITCH (SINGLE, DOUBLE)
S3	WALL SWITCH (3 WAY, 4 WAY)
ST	WALL SWITCH (TIMER)
SD	DIMMER WALL SWITCH
SOS	OCCUPANCY SENSOR WALL SWITCH
	SINGLE RECEPTACLE
	DUPLEX RECEPTACLE
	DUPLEX RECEPTACLE, 46" TO AFF AT KITCHEN, BATHS AND TOPS
	230 VOLT RECEPTACLE
	QUADRUPLEX RECEPTACLE
	FLOOR MOUNTED. FLUSH DUPLEX RECEPTACLE
	FLOOR MOUNTED. FLUSH QUAD. RECEPTACLE
	FLOOR MOUNTED. FLUSH 230 VOLT RECEPTACLE

CDL	CEILING MOUNTED DUPLEX RECEPTACLE
	ELECTRICAL PANEL
TV	TELEVISION OUTLET
	TELEPHONE OUTLET
	TELEPHONE/DATA OUTLET
	DATA OUTLET
	FLOOR MTD. FLUSH TELEPHONE/DATA OUTLET
	QUAD. DATA OUTLET RJ45
A	30A/240V NON FUSED DISCONNECT SWITCH
B	60A/240V NON FUSED DISCONNECT SWITCH
C	100A/240V NON FUSED DISCONNECT SWITCH
D	200A/240V NON FUSED DISCONNECT SWITCH

ABBREVIATIONS:

ABOVE FINISH FLOOR= A.F.F.	BELOW COUNTER= BC
COUNTER TOP LEVEL= C	PUSH BUTTON= PB
GROUND FAULT INTERRUPTER= GFCI	UNDER CABINET= UC
VERIFY PRIOR TO INSTALL= VH	VAPOR PROOF= VP
WEATHER PROOF= WP	SALVAGED = S
RECIRCULATING PUMP=RCP	ELECTRICAL CONTRACTOR = E.C
EXHAUST FAN = EF	AUTHORITY HAVING JURISDICTION = A..H.J
BATHROOM EXHAUST FAN = BEF	LIGHTING TIMER CONTROL = LTC
REMOTE TERMINAL UNIT = RTU	POOL UNIT = PU
POOL EXHAUST FAN = PEF	ELECTRIC UNIT HEATER = EUH
WATER HEATER = WH	DOAS UNIT = DU



ELECTRICAL RISER KEYED NOTES:

1. NEW 600A, 120/208V, 3–PHASE, 4–WIRE INCOMING ELECTRICAL SERVICE TO THE PROJECT'S SPACE. E.C. SHALL COORDINATE WITH THE LANDLORD/OWNER/UTILITY FOR EXACT LOCATION IN FIELD.
2. NEW 600A, 120/208V, 3–PHASE, 4–WIRE ELECTRICAL METER AND CT CABINET FOR THE PROJECT'S SPACE. E.C. SHALL COORDINATE WITH ARCHITECT/LANDLORD/OWNER FOR THE EXACT LOCATION OF THE METER AND CT CABINET IN FIELD.
3. NEW 600A, 120/208V, 3–PHASE, 4–WIRE FUSED DISCONNECT SWITCH FOR THE PROJECT'S SPACE. E.C. SHALL COORDINATE WITH ARCHITECT/LANDLORD/OWNER FOR THE EXACT LOCATION OF THE DISCONNECT SWITCH.
4. NEW 600A(MCB), 120/208V, 3–PHASE, 4–WIRE ELECTRICAL PANEL "A" FOR THE PROJECT'S SPACE. E.C. SHALL COORDINATE WITH ARCHITECT/OWNER FOR THE EXACT LOCATION.
5. NEW 125A(M.L.O.), 120/208V, 3–PHASE, 4–WIRE ELECTRICAL PANEL "B" FOR THE PROJECT'S SPACE. E.C SHALL COORDINATE WITH ARCHITECT/OWNER FOR THE EXACT LOCATION.
6. NEW 100A(M.L.O.), 120/208V, 3–PHASE, 4–WIRE ELECTRICAL PANEL "LSP" FOR THE PROJECT'S SPACE. E.C SHALL COORDINATE WITH ARCHITECT/OWNER FOR THE EXACT LOCATION.

ELECTRICAL RISER SYMBOLS
- NEW
- EXISTING ITEM/FEEDER TO REMAIN
- EXISTING ITEM/FEEDER TO BE DISCONNECTED & REMOVED

ELECTRICAL GENERAL NOTE:

A. ABOVE RISER DIAGRAM IS FOR REFERENCE PURPOSES ONLY. E.C. SHALL VERIFY EXACT POWER DISTRIBUTION IN FIELD AND INFORM ENGINEER ON RECORD FOR ANY DISCREPANCY.

B. E.C. SHALL VERIFY INCOMING SERVICE AMPERAGE, WIRE SIZING AND DISTRIBUTION.

C. ELECTRICAL CONTRACTOR TO COORDINATE FAULT CURRENT (Isc) RATING WITH UTILITY COMPANY AND AHJ PRIOR TO COMMENCING ANY WORK.

ELECTRICAL RISER | SCALE N.T.S. | 1

LIGHTING FIXTURE SCHEDULE:

	TYPE	DESCRIPTION	MANUFACTURER	CATALOG NUMBER	VOLT	No. LAMPS	LAMP TYPE	TOTAL WATTS	MOUNTING
	A	4" x 48" - SUSPENDED LIGHT- UP & DOWN	CORONET	LS4 LED UPDN-4-50-LTG3-LTG3-UNV-DB-W-AC-SD-SD	120	7	LED	266	SUSPENDED
	B	DECORATIVE PENDANT - Ø15" OPAL DIFFUSER	ACCESS	50180-BS/OPL	120	2	LED	18	PENDANT
	C	WALL SCONCE - LED	BRUCK	103050 AL/WH	120	11	LED	101	SCONCE
	D	CIRCULAR LED RING PENDANT LED Ø24"	LITHONIA LIGHTING	JEBL-18L-50K-80CRI-WH	120	16	LED	2176	PENDANT
	F	CIRCULAR LED RING PENDANT LED Ø24"	WAC	PD-33718-WT	120	7	LED	158	PENDANT
	G	CIRCULAR LED RING PENDANT LED Ø32"	WAC	PD-33732-WT	120	6	LED	528	PENDANT
	H	48" VAPOR TIGHT STRIP LED EMERGENCY BATTERY BACKUP	SYLVANIA	VAPOR1B-040UNVD840-48EC-GR-E	120	7	LED	280	LOW BAY
	I	6" LED RECESSED DOWNLIGHT	LEVITON	R6IC-3-4K-MVD;C6322-WHT-WPF	120	10	LED	200	RECESSED
	J	2X4 RECESSED LED TROFFER	ORACLE LIGHTING	24-ODVH-LED-6000L-DIM10-MVOLT-50K-90	120	12	LED	600	RECESSED
	K	TRACK LIGHTING @ 8'-0" A.F.F	LEVITON	CTL9051-M-35C-D-S	120	4	LED	36	TRACK
	Y1	EMERGENCY LIGHT	EXITRONIX	VLED-EL90	120	14	LED	30.8	SUSPENDED
	Y2	CEILING MOUNTED EMERGENCY LIGHT	TBD	TBD	120	1	LED	2.2	CEILING
	X1	EXIT SIGN-EMERGENCY LIGHT COMBO	EXITRONIX	LED-95-WH	120	6	LED	18	SUSPENDED
	X2	EXIT SIGN-EMERGENCY LIGHT COMBO	EXITRONIX	LED-95-WH	120	1	LED	3	SUSPENDED
$D	D	DIMMER SWITCH	LEVITON	AWWMT-W	-	-	-	-	WALL
$T	T	TIMER WALL SWITCH	NTERMATIC	ST700W	-	-	-	-	WALL
$OS	OS	OCCUPANCY WALL SWITCH	NTERMATIC	IOS-DDR-WH	-	-	-	-	WALL
LTC	LTC	LIGHTING TIMER CONTROL	COOPER LIGHTING	LK16, LTEKEEPER 16	120	-	-	-	WALL
OS	-	CEILING OCCUPANCY SENSOR	LEVITON/LEGRAND /APPROVED MAKES	02C10-UDW/CI-205-I	120	-	-	-	CEILING
DS	-	DAYLIGHT SENSOR	-	-	-	-	-	-	CEILING

LIGHTING SPECIFICATION NOTES:

1) ALL LIGHT FIXTURES SHALL BE FURNISHED ON NEW JUNCTION BOXES. 2) ALL FIXTURES NOT LABELED EMERGENCY WILL BE STANDARD FIXTURE AS NOTED.
2) REGENCY LIGHTING, CONTACT: JOHN SPRING, EMAIL: JOHN.SPRING@REGENCYLIGHTING.COM, PH: (661)713.3654; OR CBMC,INC, CONTACT: MIKE HERRELL, EMAIL: MHERRELL@CBMCINC.COM, PH: (760)777-0274

NY ENGINEERS

PROJECT

SAFE SPLASH/SWIMLABS

REVISIONS DATES:

SR. NO.	DETAIL	DATE

NOTES, ELECTRICAL RISER,SCHEDULE & LEGEND

E-2

ELECTRICAL LIGHTING PLAN GENERAL NOTES:

1. AVERAGE 1 FOOT CANDELA FOR EMERGENCY ILLUMINATION TO BE ARCHIVED NEAR POOL AREA PER ISPC CODE 321.3.
2. EXTERIOR LIGHTING SHALL BE METERED SEPARATELY. EXTERIOR BUILDING & POLE LIGHTING SHALL BE ON OWNERS METER.

ELECTRICAL LIGHTING PLAN KEYED WORK NOTES:

(A) CONNECT ALL EMERGENCY EGRESS FIXTURE, EXIT SIGNS & NIGHT LIGHTS TO THE NEAREST LIGHTING BRANCH CIRCUIT AHEAD OF ALL SWITCHING AND CONTROLS AS PER STATE AND LOCAL CODES.

(B) LIGHTING IN THIS AREA SHALL BE CONTROLLED BY DAYLIGHT SENSOR.

(C) DIMMER SWITCH BANK LOCATION. E.C TO COORDINATE FINAL LOCATION WITH ARCHITECT/OWNER.

(D) E.C TO COORDINATE THE BUILDING SIGNAGE CONNECTION REQUIREMENTS WITH SIGN VENDOR. BASE BID ACCORDINGLY.

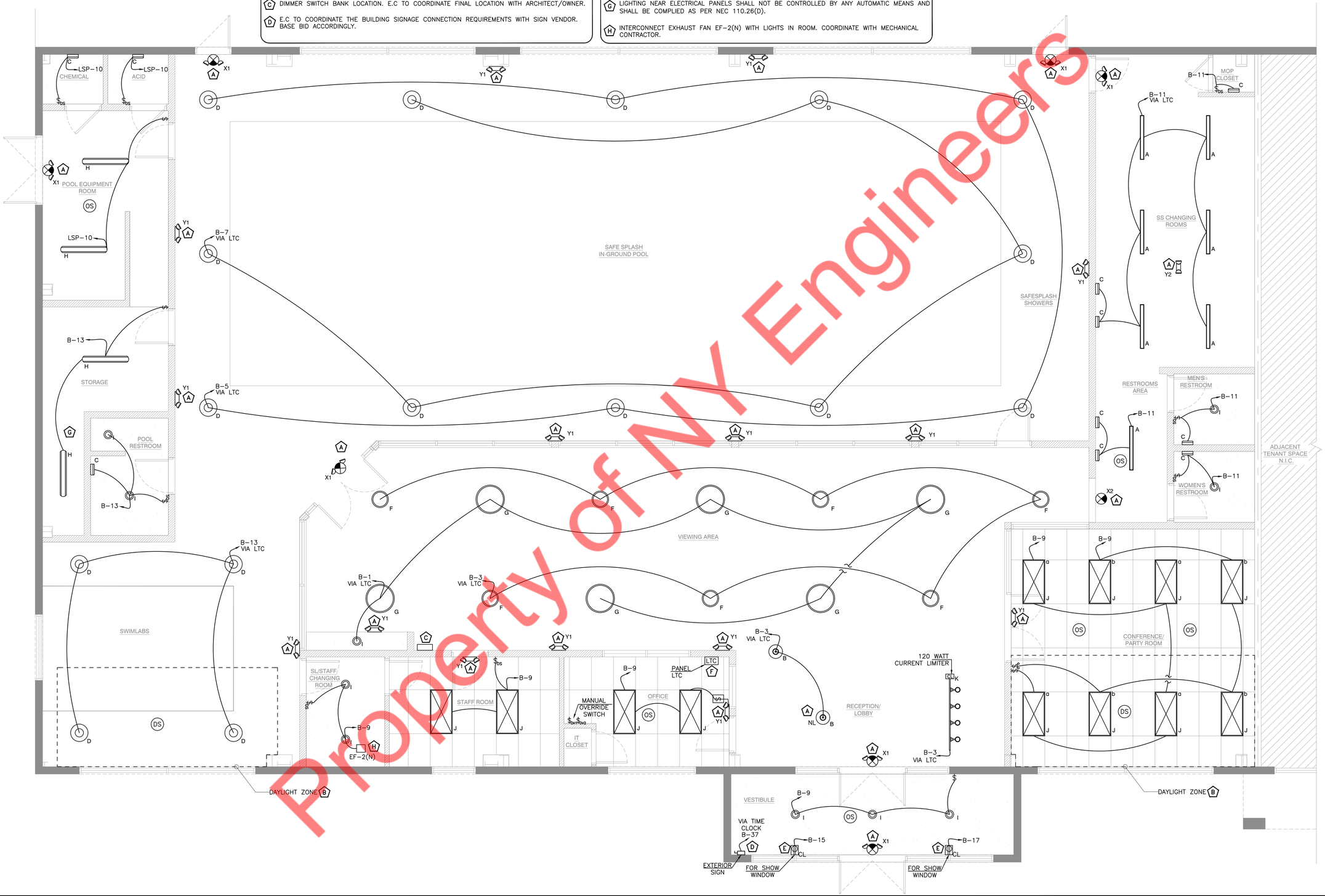
ELECTRICAL LIGHTING PLAN KEYED WORK NOTES:

(E) PROVIDE SHOW WINDOW RECEPTACLE AS PER NEC 210.62. VERIFY EXACT LOCATION WITH ARCHITECT.

(F) LIGHTING CONTROL PANEL LOCATION. E.C TO COORDINATE FINAL LOCATION WITH ARCHITECT/OWNER.

(G) LIGHTING NEAR ELECTRICAL PANELS SHALL NOT BE CONTROLLED BY ANY AUTOMATIC MEANS AND SHALL BE COMPLIED AS PER NEC 110.26(D).

(H) INTERCONNECT EXHAUST FAN EF-2(N) WITH LIGHTS IN ROOM. COORDINATE WITH MECHANICAL CONTRACTOR.



LIGHTING PLAN | SCALE 1/4" = 1'-0" | 1

NY ENGINEERS

PROJECT

SAFE SPLASH/SWIMLABS

REVISIONS DATES:

SR. NO.	DETAIL	DATE

LIGHTING PLAN

E-3

POOL ELECTRICAL NOTES:

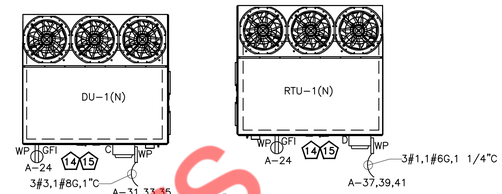
1. REFER TO POOL DRAWINGS FOR POOL EQUIPMENT LOCATION.
2. BONDING AND GROUNDING TERMINALS TO BE LISTED FOR USE IS CORROSIVE AND WET ENVIRONMENTS.
3. EQUIPMENT IN POOL EQUIPMENT ROOMS AND PITS SHALL BE SUITABLE FOR THE ENVIRONMENT.
4. WIRING METHODS FOR CHEMICAL STORAGE AND USE ROOMS TO BE ONE OF THE TYPE LISTED IN NEC 680.14(B).
5. 120 VOLT TO 240 VOLT SINGLE PHASE POOL PUMPS TO HAVE GFCI PROTECTION.
6. ALL LIGHTS, RECEPTACLES, AND EQUIPMENT LOCATED WITHIN THE ZONES SHOWN BY EXHIBIT 680.4 SHALL HAVE GFCI PROTECTION.
7. UNDERWATER LUMINAIRES SHALL HAVE GFCI PROTECTION.
8. GAS FIRED POOL HEATERS SHALL HAVE GFCI PROTECTION OF ELECTRICAL CIRCUITS.
9. ADA LIFT TO BE BONDED TO EQUIPOTENT BONDING GRID.
10. TIME SWITCHES FOR HEATERS AS PER INTERNATIONAL POOL AND SPA CODE ISPSC.

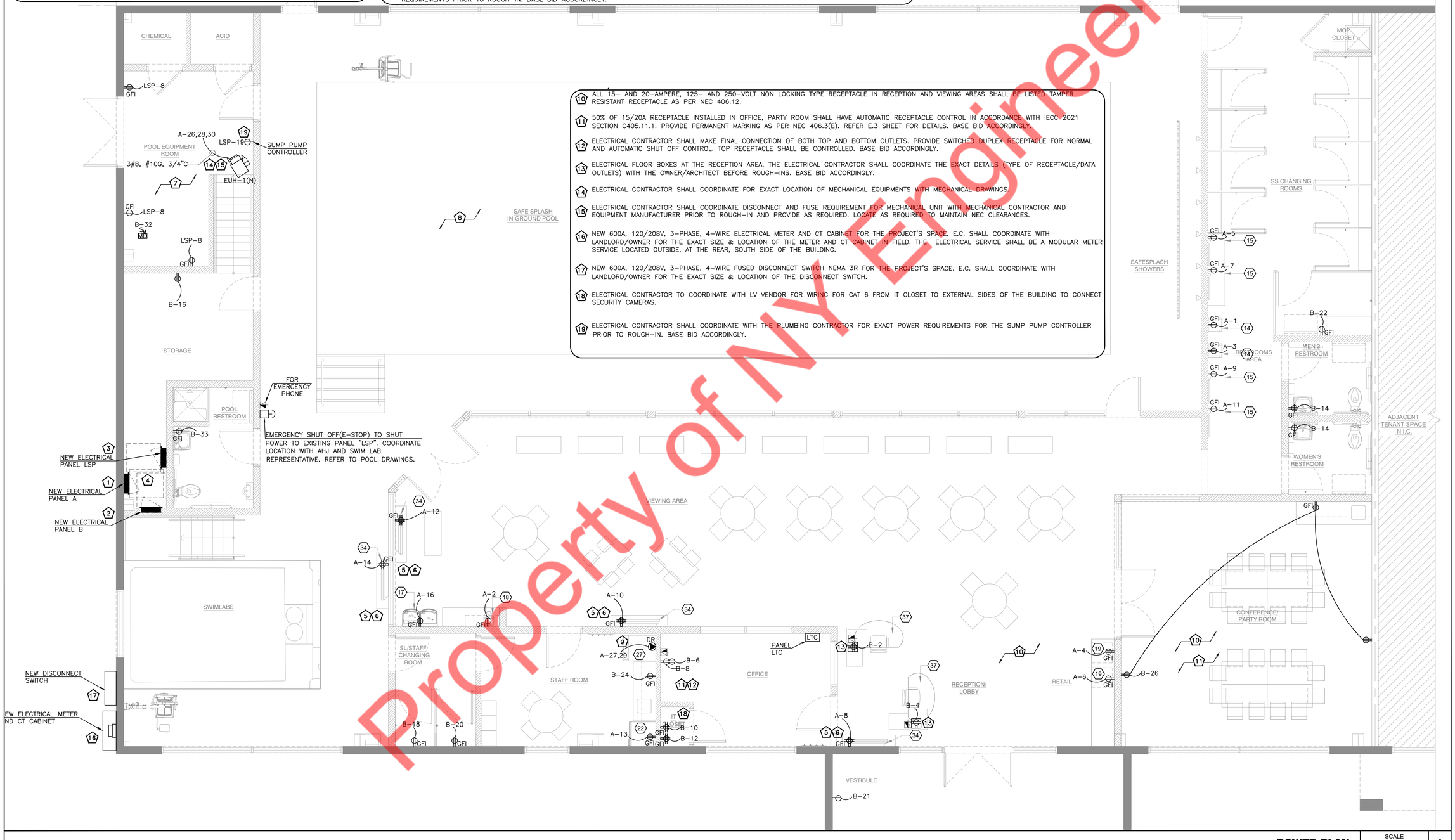
ELECTRICAL POWER PLAN GENERAL NOTES:

A. E.C. SHALL COORDINATE WITH GC/POOL DRAWINGS FOR POOL REQUIREMENTS.

ELECTRICAL POWER PLAN KEYED WORK NOTES:

1. NEW 600A(MCB), 120/208V, 3–PHASE, 4–WIRE ELECTRICAL PANEL "A". E.C. SHALL COORDINATE LOCATION WITH ARCHITECT/OWNER.
2. NEW 125A(M.L.O.), 120/208V, 3–PHASE, 4–WIRE ELECTRICAL PANEL "B". E.C. SHALL COORDINATE LOCATION WITH ARCHITECT/OWNER.
3. NEW 100A(M.L.O), 120/208V, 3–PHASE, 4–WIRE ELECTRICAL PANEL "LSP". E.C. SHALL COORDINATE LOCATION WITH ARCHITECT/OWNER.
4. WORKING SPACE CLEARANCE SHALL NOT BE LESS THAN SPECIFIED IN TABLE 110.26(1) NEC.
5. E.C TO COORDINATE LOCATION OF TV WITH ARCHITECT.
6. PROVIDE ONE KRALOY 14"X14"X8" BOX MOUNTED 4'–0" AFF ON WALL BELOW TV WITH 4 ETHERNET PLUGS WITH CAT6 CABLE IN CONDUIT TO CEILING THEN TO IT CLOSET. NO CONDUIT NEEDED ALONG CEILING.
7. REFER TO POOL DRAWINGS FOR LOCATIONS OF EQUIPMENT POWER. E.C. TO COORDINATE WITH ARCHITECT/OWNER/POOL VENDOR.
8. REFER TO POOL DRAWINGS FOR LOCATIONS & INFORMATION ABOUT BONDING ALL POOL RELATED EQUIPMENT INCLUDING CHAIR LIFT. E.C. TO COORDINATE WITH ARCHITECT/OWNER/POOL VENDOR.
9. RECEPTACLE FOR THE WASHER/DRYER. E.C. SHALL COORDINATE WITH OWNER FOR THE EXACT LOCATION AND MANUFACTURER FOR THE EXACT POWER REQUIREMENTS PRIOR TO ROUGH–IN. BASE BID ACCORDINGLY.
10. ALL 15– AND 20–AMPERE, 125– AND 250–VOLT NON LOCKING TYPE RECEPTACLE IN RECEPTION AND VIEWING AREAS SHALL BE LISTED TAMPER RESISTANT RECEPTACLE AS PER NEC 406.12.
11. 50% OF 15/20A RECEPTACLE INSTALLED IN OFFICE, PARTY ROOM SHALL HAVE AUTOMATIC RECEPTACLE CONTROL IN ACCORDANCE WITH IECC 2021 SECTION C405.11.1. PROVIDE PERMANENT MARKING AS PER NEC 406.3(E). REFER E.3 SHEET FOR DETAILS. BASE BID ACCORDINGLY.
12. ELECTRICAL CONTRACTOR SHALL MAKE FINAL CONNECTION OF BOTH TOP AND BOTTOM OUTLETS. PROVIDE SWITCHED DUPLEX RECEPTACLE FOR NORMAL AND AUTOMATIC SHUT OFF CONTROL. TOP RECEPTACLE SHALL BE CONTROLLED. BASE BID ACCORDINGLY.
13. ELECTRICAL FLOOR BOXES AT THE RECEPTION AREA. THE ELECTRICAL CONTRACTOR SHALL COORDINATE THE EXACT DETAILS (TYPE OF RECEPTACLE/DATA OUTLETS) WITH THE OWNER/ARCHITECT BEFORE ROUGH–INS. BASE BID ACCORDINGLY.
14. ELECTRICAL CONTRACTOR SHALL COORDINATE FOR EXACT LOCATION OF MECHANICAL EQUIPMENTS WITH MECHANICAL DRAWINGS.
15. ELECTRICAL CONTRACTOR SHALL COORDINATE DISCONNECT AND FUSE REQUIREMENT FOR MECHANICAL UNIT WITH MECHANICAL CONTRACTOR AND EQUIPMENT MANUFACTURER PRIOR TO ROUGH–IN AND PROVIDE AS REQUIRED. LOCATE AS REQUIRED TO MAINTAIN NEC CLEARANCES.
16. NEW 600A, 120/208V, 3–PHASE, 4–WIRE ELECTRICAL METER AND CT CABINET FOR THE PROJECT'S SPACE. E.C. SHALL COORDINATE WITH LANDLORD/OWNER FOR THE EXACT SIZE & LOCATION OF THE METER AND CT CABINET IN FIELD. THE ELECTRICAL SERVICE SHALL BE A MODULAR METER SERVICE LOCATED OUTSIDE, AT THE REAR, SOUTH SIDE OF THE BUILDING.
17. NEW 600A, 120/208V, 3–PHASE, 4–WIRE FUSED DISCONNECT SWITCH NEMA 3R FOR THE PROJECT'S SPACE. E.C. SHALL COORDINATE WITH LANDLORD/OWNER FOR THE EXACT SIZE & LOCATION OF THE DISCONNECT SWITCH.
18. ELECTRICAL CONTRACTOR TO COORDINATE WITH LV VENDOR FOR WIRING FOR CAT 6 FROM IT CLOSET TO EXTERNAL SIDES OF THE BUILDING TO CONNECT SECURITY CAMERAS.
19. ELECTRICAL CONTRACTOR SHALL COORDINATE WITH THE PLUMBING CONTRACTOR FOR EXACT POWER REQUIREMENTS FOR THE SUMP PUMP CONTROLLER PRIOR TO ROUGH–IN. BASE BID ACCORDINGLY.





POWER PLAN | SCALE 1/4" = 1'–0" | 1

NY ENGINEERS

PROJECT

SAFE SPLASH/SWIMLABS

REVISIONS DATES:

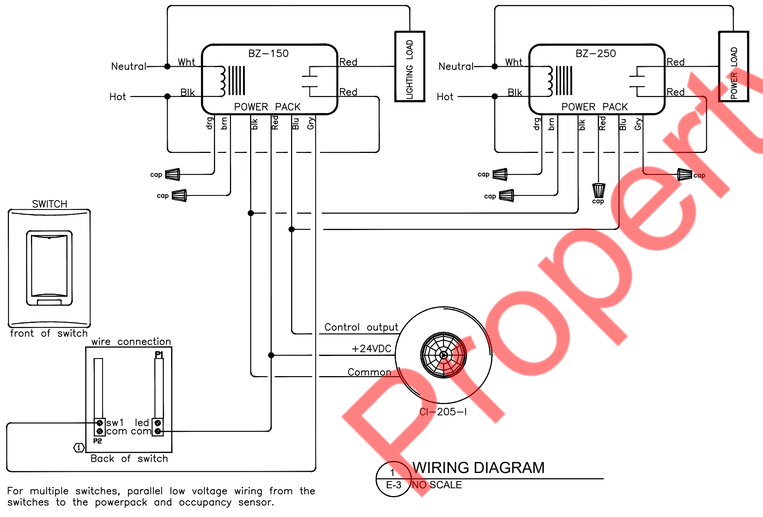
SR. NO.	DETAIL	DATE

POWER PLAN

E-4

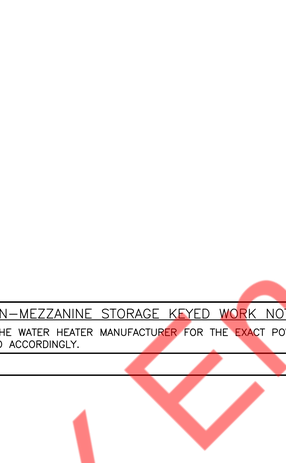
ELECTRICAL POWER PLAN–MEZZANINE STORAGE KEYED WORK NOTE:

1 E.C SHALL COORDINATE WITH THE WATER HEATER MANUFACTURER FOR THE EXACT POWER REQUIREMENTS PRIOR TO ROUGH–IN. BASE BID ACCORDINGLY.



1 WIRING DIAGRAM
E-3 NO SCALE

For multiple switches, parallel low voltage wiring from the switches to the powerpack and occupancy sensor.



POWER PLAN-MEZZANINE STORAGE | SCALE 1/4" = 1'–0" | 2

LIGHTING PLAN-MEZZANINE STORAGE | SCALE 1/4" = 1'–0" | 1

NY ENGINEERS

PROJECT

SAFE SPLASH/SWIMLABS

REVISIONS DATES:

SR. NO.	DETAIL	DATE

LIGHTING & POWER PLAN-MEZZANINE STORAGE

E-5

ELECTRICAL ROOF PLAN KEYED WORK NOTES:

1. ELECTRICAL CONTRACTOR SHALL COORDINATE FOR EXACT LOCATION OF MECHANICAL EQUIPMENTS WITH MECHANICAL DRAWINGS.
2. ELECTRICAL CONTRACTOR SHALL COORDINATE DISCONNECT AND FUSE REQUIREMENT FOR MECHANICAL UNIT WITH MECHANICAL CONTRACTOR AND EQUIPMENT MANUFACTURER PRIOR TO ROUGH-IN AND PROVIDE AS REQUIRED. LOCATE AS REQUIRED TO MAINTAIN NEC CLEARANCES.
3. INTERCONNECT PEF-1(N) & PEF-2(N) WITH DU-1(N). COORDINATE WITH MECHANICAL CONTRACTOR.
4. INTERCONNECT EXHAUST FAN EF-1(N) AND EF-3(N) WITH RTU-1(N) OR PROVIDE 24HR TIMER CONTROL. COORDINATE WITH MECHANICAL CONTRACTOR.

ELECTRICAL ROOF PLAN KEYED WORK NOTES:

5. PROVIDE MANUAL SWITCH CONTROL FOR EF-4(N) AND FAN SHALL OPERATE 24X7. COORDINATE WITH MECHANICAL CONTRACTOR.
6. PROVIDE TIME SWITCH CONTROL FOR EF-5(N). COORDINATE WITH MECHANICAL CONTRACTOR.
7. INTERCONNECT EXHAUST FAN EF-6(N) WITH LIGHTS IN ROOM. COORDINATE WITH MECHANICAL CONTRACTOR.
8. PROVIDE 120V, 1P/20 AMP NEMA 3R NON FUSED DISCONNECT SWITCH FOR EXHAUST FANS.

ROOF PLAN | SCALE 1/4" = 1'-0" | 1

NY ENGINEERS

PROJECT

SAFE SPLASH/SWIMLABS

REVISIONS DATES:

SR. NO.	DETAIL	DATE

ROOF PLAN

E-6

PANEL SCHEDULE:

PANEL:	A(N)								MOUNTING:	SURFACE
208Y/120	VOLTS,	3	PHASE,	4	WIRE				LOCATION:	STORAGE ROOM
MAIN CB	NA	MLO:	600A	BUS:	600A	MIN,			FED FROM:	NEW DISCONNECT SWITCH

NOTE: L : LIGHTING, H : HVAC LOAD, M : MOTOR LOAD, R : RECEPTACLES, O : OTHER/MISC. (TYPICAL)

CKT NO.	TRIP AMPS	DESCRIPTION OF LOAD	LOAD TYPE	LOAD (KVA)	MINIMUM BRANCH CIRCUIT	PER PHASE (KVA) A	B	C	MINIMUM BRANCH CIRCUIT	LOAD (KVA)	LOAD TYPE	DESCRIPTION OF LOAD	TRIP AMPS	CKT NO.
1	20	SWIMSUIT DRYER(#14)	O	1.00	2#12, #12G, 3/4"C	2.73			2#12, #12G, 3/4"C	1.73	E	COFFEE MACHINE(#18)	20	2
3	20	SWIMSUIT DRYER(#14)	O	1.00	2#12, #12G, 3/4"C		1.15		2#12, #12G, 3/4"C	0.15	E	BEVERAGE FRIDGE(#19)	20	4
5	20	HAIR DRYER HOLDER(#15)	O	1.00	2#12, #12G, 3/4"C			1.15	2#12, #12G, 3/4"C	0.15	E	BEVERAGE FRIDGE(#19)	20	6
7	20	HAIR DRYER HOLDER(#15)	O	1.00	2#12, #12G, 3/4"C	1.36			2#12, #12G, 3/4"C	0.36	R	RECEPTACLE-TV(#34)	20	8
9	20	HAIR DRYER HOLDER(#15)	O	1.00	2#12, #12G, 3/4"C		1.36		2#12, #12G, 3/4"C	0.36	R	RECEPTACLE-TV(#34)	20	10
11	20	HAIR DRYER HOLDER(#15)	O	1.00	2#12, #12G, 3/4"C			1.36	2#12, #12G, 3/4"C	0.36	R	RECEPTACLE-TV(#34)	20	12
13	20	REFRIGERATOR(#22)	E	0.69	2#12, #12G, 3/4"C	1.05			2#12, #12G, 3/4"C	0.36	R	RECEPTACLE-TV(#34)	20	14
15	20	MEZZANINE STORAGE RECEPTACLES	R	0.36	2#12, #12G, 3/4"C		0.91		2#12, #12G, 3/4"C	0.55	R	DRINKING FOUNTAIN(#17)	20	16
17	20	SPARE						0.00				SPARE	20	18
19	20	SPARE				0.00						SPARE	20	20
21	20	SPARE					0.00					SPARE	20	22
23	20	WH-1	M	0.04	2#12, #12G, 3/4"C			0.40	2#12, #12G, 3/4"C	0.36	R	RECEPTACLES-EXTERIOR	20	24
25	20	RCP-1	M	0.09	2#12, #12G, 3/4"C	3.42				3.33	H			26
27	*40/2P	STACKABLE WASHER/DRYER(#27)	E	2.80	2#8, #10G, 3/4"C		6.13		3#8, #10G, 3/4"C	3.33	H	EUH-1(N)	40/3P	28
29			E	2.80				6.13		3.33	H			30
31			M	10.51		16.63				6.13	O			32
33	100/3P	DU-1(N)	M	10.51	3#3, #8G, 1"C		16.63		4#1, #6G, 1 1/4"C	6.13	O	NEW PANEL "B"	125/3P	34
35			M	10.51				16.63		6.13	O			36
37			M	12.31		19.26				6.95	O			38
39	125/3P	RTU-1(N)	M	12.31	3#1, #6G, 1 1/4"C		19.26		4#3, #8G, 1 1/4"C	6.95	O	NEW PANEL "LSP"	100/3P	40
41			M	12.31				19.26		6.95	O			42
TOTAL CONNECTED LOAD (KVA)						44.44	45.44	44.93						

PANEL:	B(N)								MOUNTING:	SURFACE
208Y/120	VOLTS,	3	PHASE,	4	WIRE				LOCATION:	STORAGE ROOM
MAIN CB	NA	MLO:	125A	BUS:	125A	MIN,			FED FROM:	PANEL A(N)

NOTE: L : LIGHTING, H : HVAC LOAD, M : MOTOR LOAD, R : RECEPTACLES, O : OTHER/MISC. (TYPICAL)

CKT NO.	TRIP AMPS	DESCRIPTION OF LOAD	LOAD TYPE	LOAD (KVA)	MINIMUM BRANCH CIRCUIT	PER PHASE (KVA) A	B	C	MINIMUM BRANCH CIRCUIT	LOAD (KVA)	LOAD TYPE	DESCRIPTION OF LOAD	TRIP AMPS	CKT NO.
1	20	LIGHTING- RECEPTION AREA, VIEWING AREA	L	0.60	2#12, #12G, 3/4"C	0.96			2#12, #12G, 3/4"C	0.36	R	RECEPTACLE-RECEPTION DESK	20	2
3	20	LIGHTING- RECEPTION AREA, VIEWING AREA	L	0.30	2#12, #12G, 3/4"C		0.66		2#12, #12G, 3/4"C	0.36	R	RECEPTACLE-RECEPTION DESK	20	4
5	20	LIGHTING-SAFESPLASH POOL	L	0.85	2#12, #12G, 3/4"C			1.03	2#12, #12G, 3/4"C	0.18	R	RECEPTACLE-OFFICE	20	6
7	20	LIGHTING-SAFESPLASH POOL	L	0.85	2#12, #12G, 3/4"C	1.03			2#12, #12G, 3/4"C	0.18	R	RECEPTACLE-OFFICE	20	8
9	20	LIGHTING-OFFICE, STAFF ROOM, VESTIBULE, STAFF CHANGING ROOM & PARTY ROOM	L	0.60	2#12, #12G, 3/4"C		1.10		2#12, #12G, 3/4"C	0.50	R	IT CLOSET	20	10
11	20	LIGHTING-RR AREA, MEN'S & WOMEN'S RR, SS CHANGING ROOM, MOP CLOSET, EF-2(N), EF-6(N)	L	0.75	2#12, #12G, 3/4"C			1.25	2#12, #12G, 3/4"C	0.50	R	IT CLOSET	20	12
13	20	LIGHTING-SWIMLABS, POOL RR, STORAGE, MEZZANINE STORAGE	L	0.85	2#12, #12G, 3/4"C	1.21			2#12, #12G, 3/4"C	0.36	R	RECEPTACLE-MENS,WOMEN RR	20	14
15	20	RECEPTACLE- SHOW WINDOW	L	1.60	2#12, #12G, 3/4"C		1.78		2#12, #12G, 3/4"C	0.18	R	RECEPTACLE-STORAGE	20	16
17	20	RECEPTACLE- SHOW WINDOW	L	1.60	2#12, #12G, 3/4"C			1.78	2#12, #12G, 3/4"C	0.18	R	CONVENIENCE OUTLET	20	18
19	20	LTC PANEL	L	0.18	2#12, #12G, 3/4"C	0.36			2#12, #12G, 3/4"C	0.18	R	CONVENIENCE OUTLET	20	20
21	20	RECEPTACLE-VESTIBULE	R	0.18	2#12, #12G, 3/4"C		0.36		2#12, #12G, 3/4"C	0.18	R	CONVENIENCE OUTLET	20	22
23	20	RECEPTACLE- ROOF	R	0.54	2#12, #12G, 3/4"C			0.72	2#12, #12G, 3/4"C	0.18	R	RECEPTACLE-STAFF ROOM	20	24
25	20	EF-1(N)	M	0.33	2#12, #12G, 3/4"C	0.87			2#12, #12G, 3/4"C	0.54	R	RECEPTACLE-PARTY ROOM	20	26
27	20	EF-3(N)	M	0.22	2#12, #12G, 3/4"C		1.55		2#12, #12G, 3/4"C	1.33	M	PEF-1(N)	20	28
29	20	EF-4(N)	M	0.33	2#12, #12G, 3/4"C			1.67	2#12, #12G, 3/4"C	1.33	M	PEF-2(N)	20	30
31	20	EF-5(N)	M	0.49	2#12, #12G, 3/4"C	0.50			2#12, #12G, 3/4"C	0.01	H	MOTORISED DAMPER	20	32
33	20	RECEPTACLES-POOL RESTROOM	R	0.18	2#12, #12G, 3/4"C		0.18					SPARE	20	34
35	20	LIGHTING-EXTERIOR SIGN/TIME CLOCK	L	1.20	2#12, #12G, 3/4"C			1.20				SPARE	20	36
37	20	LIGHTING- EXTERIOR POLE	L	1.20	2#12, #12G, 3/4"C	1.20						SPARE	20	38
39	20	LIGHTING- EXTERIOR POLE	L	1.20	2#12, #12G, 3/4"C		1.20					SPARE	20	40
41	20	LIGHTING- EXTERIOR POLE	L	1.20	2#12, #12G, 3/4"C			1.20				SPARE	20	42
TOTAL CONNECTED LOAD (KVA)						6.14	6.83	8.85						

PANEL:	LSP (N)								MOUNTING:	SURFACE
208Y/120	VOLTS,	3	PHASE,	4	WIRE				LOCATION:	STORAGE ROOM
MAIN CB	NA	MLO:	125A	BUS:	125A	MIN,			FED FROM:	PANEL A(N)

NOTE: L : LIGHTING, H : HVAC LOAD, M : MOTOR LOAD, R : RECEPTACLES, O : OTHER/MISC. (TYPICAL)

CKT NO.	TRIP AMPS	DESCRIPTION OF LOAD	LOAD TYPE	LOAD (KVA)	MINIMUM BRANCH CIRCUIT	PER PHASE (KVA) A	B	C	MINIMUM BRANCH CIRCUIT	LOAD (KVA)	LOAD TYPE	DESCRIPTION OF LOAD	TRIP AMPS	CKT NO.
1	20/2P	POOL FILTRATION PUMP	O	1.66	2#12, #12G, 3/4"C	3.33			2#12, #12G, 3/4"C	1.66	O	POOL FILTRATION PUMP	20/2P	2
3			O	1.66			3.33			1.66	O			4
5	20	AUTOMATIC CHEMISTRY CONTROLLER	O	1.41	2#12, #12G, 3/4"C			1.89	2#12, #12G, 3/4"C	0.48	O	POOL HEATER (GAS HEATER)	20	6
7	20	CHLORINATION SYSTEM ACCUTAB 1030	O	1.92	2#12, #12G, 3/4"C	2.64			2#12, #12G, 3/4"C	0.72	R	EQUIPMENT ROOM RECEPTACLES	20	8
9	20	CO2 FEED SYSTEM BECSYS	O	1.70	2#12, #12G, 3/4"C		1.88		2#12, #12G, 3/4"C	0.18	L	EQUIPMENT ROOM LIGHTING	20	10
11	20	CO2 FEED SYSTEM BECSYS	O	1.70	2#12, #12G, 3/4"C			2.70	2#12, #12G, 3/4"C	1.00	L	LED POOL LIGHTS	20	12
13	20/2P	WATER LEVEL CONTROLLER JANDY	O	0.05	2#12, #12G, 3/4"C	0.07			2#12, #12G, 3/4"C	0.02	O	HYDROXYL SECONDARY SANITIZER	20	14
15			O	0.05			1.78		2#12, #12G, 3/4"C	1.73	O	AQUATI CONTROL (PH SWITCH)	20	16
17	20	CHLORINATION SYSTEM ACCUTAB 1030	O	1.92	2#12, #12G, 3/4"C			1.92				SPARE	20	18
19	20	SUMP PUMP CONTROLLER	O	1.20	2#12, #12G, 3/4"C	1.20						SPARE	20	20
21	20	SPARE					0.00					SPARE	20	22
23	20	SPARE						0.00				SPARE	20	24
25	20	SPARE				0.00						SPARE	20	26
27	20	SPARE					0.00					SPARE	20	28
29	20	SPARE						0.00				SPARE	20	30
TOTAL CONNECTED LOAD (KVA)						7.24	6.99	6.51						

EQUIPMENT SCHEDULE:

ITEM NO.	DESCRIPTION	VOLTAGE	PHASE	AMPS	kW
14	SWIMSUIT DRYER	115	1	8.60	1.00
15	HAIR DRYER HOLDER	115	1	8.70	1.00
17	DRINKING FOUNTAIN	115	1	4.78	0.55
18	COFFEE MACHINE	115	1	15.00	1.73
19	BEVERAGE FRIDGE	115	1	1.30	0.15
22	REFRIGERATOR	115	1	5.97	0.69
27	STACKABLE WASHER/DRYER	208	1	26.92	5.60
34	TV	115	1	4.78	0.55

LIGHTING CONTROL PANEL SCHEDULE:

PANEL #	CKT #	RELAY	DESCRIPTION	LIGHT TYPE	SWITCH
B	1	1	RECEPTION, VIEWING AREA	G	DIMMER SWITCH
B	3	2	RECEPTION, VIEWING AREA	F,B & K	DIMMER SWITCH
B	11	3	CHANGING ROOMS	A	DIMMER SWITCH
B	5	4	SAFE SPLASH POOL	D	DIMMER SWITCH
B	7	5	SAFE SPLASH POOL	D	DIMMER SWITCH

PANEL GENERAL NOTES:

1. 120 VOLT TO 240 VOLT SINGLE PHASE POOL PUMPS TO HAVE GFCI PROTECTION.
2. ALL THE POOL EQUIPMENT CIRCUITING SHOWN IN THE PANEL "LSP" ARE FOR THE REFERENCE PURPOSE ONLY. ELECTRICAL CONTRACTOR SHALL VERIFY THE EXACT POWER PROVISIONS FOR THE POOL EQUIPMENT ROOM WITH THE VENDOR PRIOR TO ROUGH-IN. BASE BID ACCORDINGLY.

PANEL KEYED NOTES:

*	INDICATES GFCI CIRCUIT BREAKER.

NY ENGINEERS

PROJECT

SAFE SPLASH/SWIMLABS

REVISIONS DATES:

SR. NO.	DETAIL	DATE

PANEL SCHEDULE & WIRING DIAGRAM

E-7

PANLE SCHEDULE

SCALE 1/4" = 1'-0"

PLUMBING NOTES

GENERAL

A) THE GENERAL CONDITIONS OF THE GENERAL SPECIFICATIONS. ALONG WITH ALL APPLICABLE INSTRUCTIONS TO BIDDERS SHALL FORM A PART OF THIS SECTION OF THE SPECIFICATIONS.
B) REFERENCE IS MADE TO REQUISITES FOR BIDDERS AND CONTRACTORS UNDER OTHER SECTIONS OF THESE SPECIFICATIONS. WHICH SHALL BE CONSIDERED BINDING. UNLES OTHERWISE NOTED UNDER THIS SECTION.

SCOPE

EACH CONTRACTOR SHALL THOROUGHLY ACQUAINT HIMSELF WITH THE CONSTRUCTION DETAILS, BOTH AS ON TENANT CONSTRUCTION DRAWINGS AND LANDLORD'S AS REFERRED TO, BEFORE SUBMITTING HIS BID AS NO ALLOWANCES WILL BE MADE BECAUSE OF THE CONTRACTOR'S UNFAMILIARITY WITH THESE DETAILS. ALL PERFORMANCE OF CONSTRUCTION SHALL BE AS REQUIRED BY THE PACE OF THE GENERAL CONSTRUCTION. INSPECTION Of SITE ALL PROPOSALS SHALL PRECLUDE THAT CONTRACTOR IS FAMILIAR WITH JOB SITE, CONDITIONS AND UTILITY LOCATIONS AND THE LACK OF SPECIFIC INFORMATION ON THE DRAWINGS SHALL NOT RELIEVE THE CONTRACTOR OF ANY RESPONSIBILITY.

PERMITS

ALL PERMITS AND LICENSES NECESSARY FOR THE PROPER EXECUTION OF THE WORK SHALL BE SECURED AND PAID FOR BY THE SUBCONTRACTOR INVOLVED.

CODE REQUIREMENTS

ALL WORK UNDER THIS CONTRACT SHALL COMPLY WITH THE PROVISIONS OF THE SPECIFICATIONS, DRAWINGS OR AS DIRECTED BY THE OWNER. AND SHALL SATISFY ALL APPLICABLE CODES. ORDINANCES. OR REGULATIONS OF THE GOVERNING BODIES WHETHER SO SHOWN OR NOT. ALL MODIFICATIONS REQUIRED BY SUCH AUTHORITIES SHALL BE MADE BY THE CONTRACTOR WITHOUT ANY ADDITIONAL COST TO THE OWNER.

MATERIALS AND WORKMANSHIP

A. ALL MANUFACTURED ARTICLES, MATERIALS. AND EQUIPMENT SHALL BE APPLIED AS RECOMMENDED BY THE MANUFACTURERS. AND UNLESS OTHERWISE SPECIFIED SHALL BE NEW, AND FREE FROM ANY DEFECTS. ALL LIKE MATERIALS USED SHALL BE OF THE SAME MANUFACTURE AND QUALITY UNLESS OTHERWISE SPECIFIED.

B. ALL WORK UNDER THIS CONTRACT SHALL BE PERFORMED BY COMPETENT WORKMEN AND EXECUTED IN A NEAT AND WORKMANLIKE MANNER. WORK SHALL BE PROPERLY PROTECTED DURING CONSTRUCTION. AND ON COMPLETION. THE INSTALLATION SHALL BE THOROUGHLY CLEANED AND ALL DEBRIS PRESENT AS A RESULT OF THIS CONTRACT SHALL BE REMOVED FROM THE PREMISES. DO NOT JUST ABANDON..

CODE AND REGULATIONS

EACH SUBCONTRACTOR SHALL COMPLY WITH ALL LAWS. ORDINANCES. RULES AND REGULATIONS BEARING ON THE CONDUCT OF THE WORK AS DRAWN OR SPECIFIED. IF A SUBCONTRACTOR OBSERVES THAT THE DRAWINGS AND SPECIFICATIONS ARE AT A VARIANCE. HE SHALL PROMPTLY NOTIFY THE GENERAL CONTRACTOR AND THE TENANT IN WRITING. IF ANY SUBCONTRACTOR PERFORMS ANY WORK KNOWING IT TO BE CONTRARY TO LAWS, ORDINANCES. RULES AND REGULATIONS AND WITHOUT GIVING SUCH NOTICE. THE SUBCONTRACTOR SHALL BEAR ALL COSTS ARISING THEREFROM.

PROTECTION OF WORK AND PROPERTY

A) EACH SUBCONTRACTOR SHALL CONTINUOUSLY MAINTAIN ADEQUATE PROTECTION OF ALL HIS WORK FROM DAMAGE AND SHALL PROTECT THE OWNER'S PROPERTY FROM INJURY OR LOSS ARISING FROM HIS WORK. HE SHALL MAKE GOOD ANY SUCH DAMAGE. INJURY. OR LOSS. EXCEPT SUCH AS MAY BE DIRECTLY DUE TO CAUSES BEYOND HIS CONTROL AND NOT ALL HIS FAULT OR NEGLIGENCE. HE SHALL ADEQUATELY PROTECT ADJACENT PROPERTY AS WELL.

B) EACH SUBCONTRACTOR SHALL TAKE ALL NECESSARY PRECAUTIONS FOR THE SAFETY OF THEIR EMPLOYEES ON THE WORK AND SHALL COMPLY WITH ALL PROVISIONS OF FEDERAL, STATE AND LOCAL BUILDING CODES AND SAFETY LAWS TO PREVENT ACCIDENTS OR INJURY TO PERSONS ON OR ADJACENT TO THE PREMISES WHERE THE WORK IS BEING PERFORMED. EACH SUBCONTRACTOR SHALL MAINTAIN ALL INSURANCE REQUIRED TO PROTECT HIMSELF. OWNER AND TENANT FOR THE DURATION OF THE WORK AGAINST PROPERTY OAMAGE AND PUBLIC LIABILITY.

CHANGES IN THE WORK

THE TENANT WITHOUT INVALIDATING THE CONTRACT, MAY ORDER EXTRA WORK OR MAKE CHANGES BY ALTERING. ADDING TO OR DEDUCTING FROM THE WORK. THE CONTRACT SUM BEING ADJUSTED ACCORDINGLY.

COOPERATION

ALL WORK UNDER THESE SPECIFICATIONS SHALL BE ACCOMPLISHED IN CONJUNCTION WITH OTHER CONTRACTORS AND TRADES OF THIS PROJECT IN A MANNER WHICH WILL ALLOW EACH CONTRACTOR AND TRADE ADEQUATE TIME AT THE PROPER STAGE OF CONSTRUCTION TO FULFILL HIS CONTRACTS. REFERENCE SHALL BE MADE TO THE OWNER FOR INSTRUCTIONS SHOULD ANY QUESTIONS ARISE BETWEEN TRADES AS TO THE PLACING OF LINES. DUCTS, CONDUITS. FIXTURES. OR EQUIPMENT. OR SHOULD IT APPEAR DESIRABLE TO REMOVE ANY GENERAL CONSTRUCTION WHICH WOULD AFFECT THE APPEARANCE OR STRENGTH OF THE STRUCTURE.

SUBSTITUTION OF MATERIALS

MANUFACTURER'S NAMES ARE LISTED HEREIN TO ESTABLISH A STANDARD. THE PRODUCTS OF OTHER MANUFACTURERS WILL BE ACCEPTABLE. IF IN THE OPINION OF THE TENANT. THE SUBSTITUTE MATERIAL IS OF A QUALITY AS GOOD OR BETTER THAN THE MATERIAL SPECIFIED. AND WILL SERVE WITH EQUAL EFFICIENCY AND DEPENDABILITY. THE PURPOSE FOR WHICH THE ITEMS SPECIFIED WERE INTENDED.

SHOP DRAWINGS

SHOP DRAWINGS AND CATALOG DATA ON ALL MAJOR ITEMS OF EQUIPMENT AND SYSTEMS. AND SUCH OTHER ILLUSTRATIVE MATERIAL AS MAY BE CONSIDERED NECESSARY BY THE TENANT. SHALL BE SUBMITTED BY THIS CONTRACTOR IN ADEQUATE TIME TO PREVENT DELAY AND CHANGES DURING CONSTRUCTION.

DRAWINGS AND SPECIFICATIONS

A) THE DRAWINGS SHOW DIAGRAMMATICALLY THE LOCATIONS OF THE VARIOUS LINES, DUCTS, CONDUITS. FIXTURES. AND EQUIPMENT AND THE METHOD OF CONNECTING AND CONTROLLING THEM. IT IS NOT INTENDED TO SHOW EVERY CONNECTION IN DETAIL AND ALL FITTINGS REQUIRED FOR A COMPLETE SYSTEM.

B) SHOULD ANY CHANGES BE DEEMED NECESSARY BY THE CONTRACTOR IN ITEMS SHOWN ON CONTRACT DRAWINGS. THE SHOP DRAWINGS. DESCRIPTIONS. AND THE REASON FOR THE PROPOSED CHANGES SHALL BE SUBMITTED TO THE OWNER FOR APPROVAL.

RESPONSIBILITY

A) THE CONTRACTOR WILL BE HELD RESPONSIBLE FOR THE SATISFACTORY AND COMPLETE EXECUTION OF ALL WORK INCLUDED IN HIS CONTRACT. HE SHALL PRODUCE COMPLETE FINISHED OPERATING SYSTEMS AND PROVIDE ALL INCIDENTAL ITEMS REQUIRED AS PART OF HIS WORK, REGARDLESS OF WHETHER SUCH ITEM IS PARTICULARLY SPECIFIED OR INDICATED.

B) CONTRACTOR SHALL SUPPLY TO LANDLORD AND TENANT A CERTIFIED BALANCE REPORT AT COMPLETION OF PROJECT. THIS IS REQUIRED FOR BOTH REMODELED AND NEW STORES.

GENERAL PROVISIONS

A) SCOPE: PROVIDE ALL LABOR. MATERIAL. AND EQUIPMENT IN ACCORDANCE WITH THESE SPECIFICATIONS AND THE ACCOMPANYING DRAWINGS TO PROVIDE A COMPLETE AND PROPERLY OPERATING PLUMBING SYSTEM FOR THE BUILDING. OBTAIN WATER, SEWER, GAS TAPS AND ANY OTHER REQUIRED UTILITIES AND EXTEND SERVICE FROM SAME TO BUILDING AS SHOWN ON DRAWINGS. VISIT THE SITE FOR UNDERSTANDING OF THE WORK TO BE DONE BEFORE SUBMITTING BID. COORDINATE THIS WORK WITH THE WORK OF THE OTHER TRADES ON THE PROJECT. ALL PLUMBING IS TO BE ROUGHED IN WHILE THE BUILDING IS BEING CONSTRUCTED AT SUCH TIMES AS NOT TO DELAY THE GENERAL CONTRACTOR ON THE BUILDING.

B. GENERAL REQUIREMENTS: COMPLY WITH ALL FEDERAL. STATE. AND LOCAL REQUIREMENTS. CODES. RULES. AND ORDINANCES GOVERNING WORK OF THIS CHARACTER. PAY FOR AND OBTAIN NECESSARY CONSTRUCTION PERMITS AND CERTIFICATES OF INSPECTON.

1. DRAWINGS: THE LOCATION OF THE PIPING RUNS ARE APPROXIMATE AND THE CONTRACTOR MUST MAKE ANY NECESSARY CHANGES IN THE PIPING RUNS ETC. AT NO ADDITIONAL COST TO THE OWNER. OUTLET LOCATIONS ARE CRITICAL AND MUST BE LOCATED EXACTLY ACCORDING TO THE PLUMBING PLAN. COORDINATE THIS WORK WITH THE INSTALLERS OF EQUIPMENT FURNISHED AND INSTALLED BY OTHERS. REFER TO THE OTHER DRAWINGS FOR DETAILS OF THE BUILDING CONSTRUCTION AND THE OTHER MECHANICAL. ELECTRICAL, AND EQUIPMENT FEATURES.
2. COORDINATION AND WORKMANSHIP: SCHEDULE THIS WORK SO THAT IT WILL BE PROPERLY COORDINATED WITH ALL OTHER TRADES. WORKMANSHIP SHALL BE IN ACCORDANCE WITH THE BEST PRACTICE FOR THE CLASS OF WORK INVOLVED. WORKMANSHIP SHALL ALLOW THE APPLIANCE TO OPERATE AS INTENDED AND BE INSTALLED TO BEST PROTECT THE PUBLIC AND OPERATORS FROM INJURY OR DAMAGE. AND TO PRESENT A NEAT. PLEASING. AND ORDERLY APPEARANCE.

GUARANTEE

MATERIALS GUARANTEE AND WORKMANSHIP SHALL BE GUARANTEED FOR ONE (1) YEAR FROM DATE OF FINAL ACCEPTANCE. DEFECTIVE WORK AND ALL DAMAGES CAUSED THEREBY WHICH MAY OCCUR DURING THE TERM OF THE AFOREMENTIONED GUARANTEE WILL BE REPAIRED AND/OR REPLACED AT NO EXPENSE TO THE OWNER.

MATERIAL AND PERFORMANCE

A) MATERIALS: ALL MATERIALS SHALL BE NEW AND OF THE QUALITY INDICATED BY THE BRAND NAMES. SUBSTITUTIONS OF MATERIALS OF EQUAL QUALITY BY OTHER FIRST-LINE MANUFACTURES MAY BE ACCEPTABLE PROVIDED A LIST OF SUCH SUBSTITUTIONS IS APPROVED IN WRITING. A SUBSTITUTIONS LIST SHALL BE SUBMITTED IN TRIPLICATE WITHIN FIVE (5) DAYS AFTER CONTRACT IS LET.

B) BACKFILLING: PERFORM ALL NECESSARY EXCAVATING AND BACKFILLING REQUIRED FOR THIS INSTALLATION. PREPARE BED OF SAND OR GRAVEL OR EQUIVALENT IN ROCK SCREENINGS SO AS TO ELIMINATE SHIMMING AND VOID SPACES UNDER ANY OF THE UTILITY SERVICE PIPES. BENDING OF ANY HARD PIPE WILL NOT BE PERMITTED. WHERE A CHANGE IN DIRECTION IS NECESSARY ON PRESSURE PIPES, "COMPATIBLE" COUPLINGS OR EQUAL SHALL BE USED AND BENDS MAY NOT EXCEED 90 DEGREES. ALL EXCAVATION BELOW THE BOTTOM OF FOOTINGS SHALL BE BACKFILLED WITH 2000 PSI CONCRETE. OTHER BACKFILL SHALL CONSIST OF 2-3" OF SAND OR ROCK SCREENINGS AND EARTH TO A FINAL LEVEL EQUAL TO ITS ORIGINAL CONDITION. IN THE EVENT THE BACKFILL SHOULD SETTLE BEFORE THE FINAL TOP SURFACE IS APPLIED, APPLY ADDITIONAL BACKFILL TO SUSTAIN THE ORIGINAL LEVEL. CARE SHOULD BE TAKEN TO MINIMIZE THE DUST LEVEL WHEN EXCAVATING AND BACKFILLING SO AS TO COMPLY WITH FEDERAL AND STATE E.P.A REGULATIONS RELATING TO THIS TYPE OF WORK (FUGITIVE DUST).

C) PIPING INSTALLATION: CLEAN-OUTS MUST BE INSTALLED ON MINIMUM DROP LINES EVEN THOUGH NOT SHOWN ON THE BLUEPRINTS. USE REDUCING FITTINGS IN MAKING REDUCTIONS IN SIZE OF PIPE. REAM ALL PIPE AFTER CUTTING. THEN TURN PIPES ON END AND KNOCK OUT ALL LOOSE DIRT AND SCALE BEFORE INSTALLING. MAKE CHANGES IN HORIZONTAL DIRECTION OF SOIL AND WASTE PIPES WITH LONG RADIUS FITTINGS OR WITH V BRANCHES AND 1/8 OR 1/16 BENDS. CONNECT SOIL STACKS AT BASE TO HORIZONTAL RUNS WITH 1/4" CONNECTIONS. WATER SUPPLY PIPES TO FIXTURES AND WASTE PIPES FROM FIXTURES SHALL BE CENTERED IN THE PROPER PLACE RELATIVE TO THE CENTER LINE OF THE FIXTURE. NO OFFSETS WILL BE ALLOWED. ALL PIPES SHALL BE RUN MECHANICALLY STRAIGHT AND SQUARE WITH BUILDING LINES. EXCEPT FOR REQUIRED PITCH ON HORIZONTAL LINES. AND ALL CHANGES IN DIRECTION SHALL BE MADE WITH FITTINGS. WATER PIPING TO BE ROUTED IN WALLS. UNDER THE FLOOR SLAB. AND ABOVE SUSPENDED CEILINGS AS NOTED. WHERE WATER LINES ARE ROUTED UNDER THE FLOOR SLAB. NO MECHANICAL JOINTS SHALL BE MADE UNDER THE SLAB EXCEPT AS LISTED BELOW. WATER PIPING SHALL BE INSTALLED NOT TO EXERT VERTICAL NOR HORIZONTAL STRESSES ON THE SEATING OF UNIONS. UNIONS SHALL BE COPPER TYPE NIBCO #733 OR EQUAL.

NO WAX. PUTTY. OR VARNISH WILL BE PERMITTED. CRACKED FITTINGS SHALL BE REMOVED AND REPLACED WITH NEW FITTINGS. MAKE THREADED JOINTS IN BRASS PIPE AND FITTINGS WITH PIPE THREADING TO THE SHOULDER OF THE FITTINGS. NO SUP JOINTS OR COUPLING JOINTS IN BRASS PIPE WILL BE PERMITTED. EXCEPT ON THE FIXTURE SIDE OF THE TRAP.

D) NATURAL GAS PIPING: FOR ABOVE GROUND INSTALLATIONS, ALL FITTINGS TO BE JOINED WITH TEFLON TAPE SEAL OR OTHER SUITABLE SEAL AND MADE IN CONFORMANCE WITH THE BEST PRACTICES OF AGA AND NFPA 54. UNIONS SHALL BE CAST BLACK IRON AND INSTALLED IN A MANNER SUCH THAT NO STRESS WILL BE PLACED ON THE MALE-FEMALE SEALING SURFACES. PROPER ALIGNMENT WILL BE MADE AT TIME OF INSTALLATION. ALL JOINTS AND CONNECTIONS SHALL BE THOROUGHLY CLEANED OF OIL. THREAD CUTTINGS AND RESIDUALS TO ACCEPT ENAMEL PAINT. ROUGH OR SHARP EXPOSED THREAD SURFACES SHALL BE FILED SMOOTH. TESTING SHALL BE AS OUTLINED UNDER SECTION 15A. PARAGRAPH 11. TESTS.

WATER PIPES

JOINTS SHALL BE CLEANED AND DEBURRED AS RECOMMENDED BY THE MANUFACTURER AND FEDERAL, STATE AND LOCAL CODES AND SOLDERED AS LISTED BELOW. FLUX SHALL BE NON-CORROSIVE.
A. ABOVE GRADE: WHERE FITTINGS ARE SOLDERED BOTH FITTINGS AND TUBING SHALL BE CLEANED AS DESCRIBED ABOVE. UNDER NO CIRCUMSTANCES SHALL DISSIMILAR METALS COME INTO DIRECT CONTACT WITH COOPER TUBING; E.G., GALVANIZED STRAPPING, HANGERS, OR CLAMPS TO SECURE THE TUBING.

B. BELOW GRADE:/ FLOOR SLAB ON EARTH OR STONE FILL: HIGH TEMPERATURE, SOLDER, 1200°F OR GREATER MELTING POINT.

NOTE: WATER PIPE TO BE PROPERLY SECURED AND ALIGNED SO AS NOT TO EXERT VERTICAL OR HORIZONTAL STRESSES ON THE SEATING OF THE MATING (MALE AND FEMALE) SURFACES OF THE UNIONS.

A. MATERIALS - UNDERGROUND: TYPE "L" COPPER TUBE, SOFT TEMPER

B. MATERIALS - ABOVEGROUND: TYPE "L" COPPER TUBE, HARD DRAWN

C. INSULATION: INSULATION FOR HOT AND COLD WATER & HOT WATER RETURN PIPING SHALL BE 1/2" (1" ON 1ST 8FT. FROM TANK) THICK ARMAFLEX UL LABELED OR FIBERGLASS 25 WITH ASJ/SSL FOIL/VINYL JACKET OR EQUAL. INSULATE ALL PIPING AND FITTINGS.

GAS PIPING

A. UNDERGROUND GAS PIPING: ASTM A53. SCHEDULE 40 BLACK STEEL PIPE WITH LONG RADIUS STEEL WELDING FITTINGS INCLUDING CATHODIC PROTECTION OR POLYETHYLENE AS APPROVED BY LOCAL GAS COMPANY AND AUTHORITY HAVING JURISDICTION.

B. GAS PIPING ABOVE GROUND: ASTM A53. SCHEDULE 40 BLACK STEEL WITH 125 POUND BLACK MALLEABLE IRON SCREWED FITTINGS. INSTALL MOISTURE TRAPS ON HVAC UNITS. WATER HEATER. AND KITCHEN EQUIPMENT.

C. GAS PIPING COMPOUND AT JOINTS: IN COMPLIANCE WITH NFPA BULLETIN #54 AND LOCAL APPLICABLE CODES AND SUITABLE FOR NATURAL GAS SERVICE.

WASTE PIPING

PVC SCH. 40. CAST IRON - HUB TYPE WITH NEOPRENE JOINTS - WITH STAINLESS STEEL CONNECTORS ON ALL PIPES WHEN PVC IS NOT ALLOWED PER LOCAL CODE. INSTALL HORIZONTAL DRAIN AND SLOPE OF DRAINAGE PIPING SHALL BE 1/4" PER FOOT OF RUN FOR PIPE 3" & SMALLER, 1/8" PER FOOT OF RUN FOR PIPE 4" & LARGER.

PIPE SLEEVES/ESCUTCHEONS

PROVIDE CHROME-PLATED ESCUTCHEONS ON ALL PIPES PASSING THROUGH WALLS. FLOORS, OR CEILINGS OF FINISHED ROOMS. ESCUTCHEONS TO BE BEATON & CADWELL. #10. 40. 6A OR EQUIVALENT WITH SET-SCREWS. PROVIDE ESCUTCHEONS ON ALL WASTE LINES FROM PLUMBING FIXTURES, WHETHER THROUGH WALLS. FLOORS. AND WHETHER CONCEALED BEHIND COUNTERS OR EXPOSED. PIPE SLEEVES SHALL BE PROVIDED WHEN PIPES PENETRATE FOUNDATION AND SHALL BE 1" LARGER THAN PIPE, SEAL SLEEVE W/CAULKING.

PLUMBING FIXTURES

FURNISH AND INSTALL PLUMBING FIXTURES AS SHOWN ON DRAWINGS WITH ALL ACCESSORIES AND TRIM AS LISTED. ALL FIXTURES SHALL BE PROTECTED THROUGH THE COURSE OF THE CONSTRUCTION. ANY FIXTURE DAMAGED SHALL BE REPLACED WITHOUT ADDITIONAL EXPENSE TO THE OWNER. CONNECTION TO OTHER FIXTURES CONNECT BUILDING SERVICE PIPING. INCLUDING BUT NOT LIMITED TO WATER. DRAIN; AND GAS PIPES TO EQUIPMENT AS INDICATED IN EQUIPMENT SPECIFICATIONS. PROVIDE BACKFLOW PROTECTION ON COFFEE MACHINES AND BEVERAGE EQUIPMENT SUPPLY CONNECTIONS.

TESTS

A. DRAINAGE AND VENT PIPING- DRAINAGE AND VENT PIPING SHALL BE TESTED BEFORE THE PLUMBING FIXTURES ARE INSTALLED BY CAPPING THE OPENINGS AND FILLING THE ENTIRE SYSTEM WITH WATER AND ALLOWING IT TO STAND THUS FILLED NOT LESS THAN ONE (1) HOUR. INSPECT WATER LEVEL TO DETERMINE IF PIPING IS TIGHT.

B. WATER PIPING - THE WATER SUPPLY PIPING LINES SHALL BE TESTED BEFORE THE PLUMBING FIXTURES ARE CONNECTED BY FILLING THE ENTIRE SYSTEM WITH POTABLE WATER AND APPLYING HYDROSTATIC PRESSURE OF 100 PSI AND ALLOWING TO STAND FOR NOT LESS THAN FOUR (4) HOURS AT THIS PRESSURE TO PROVE PLUMBING INTEGRITY.

C. GAS PIPING - IN LIEU OF LOCAL REQUIREMENTS. GAS PIPING SHALL BE FILLED WITH COMPRESSED AIR TO 150 PSI AND HELD FOR A PERIOD OF FOUR (4) HOURS. EACH JOINT SHALL BE CHECKED BY LIQUID SOAP OR SPECIAL LIQUID CHEMICAL FOR LEAKS. NOTE: REMOVE ALL GAS VALVES AND PROTECT FROM DAMAGE BEFORE TESTING SYSTEM.

DISINFECTING OF POTABLE WATER SYSTEM

UPON COMPLETION OF INSTALLATION DISINFECT THE WATER SYSTEM BY FLUSHING IT WITH SOLUTION CONTAINING 50 PARTS PER MILLION OF CHLORINE AND ALLOW IT TO STAND FOR 24 HOURS OR THE WATER SYSTEM BY FLUSHING IT WITH SOLUTION CONTAINING 200 PARTS PER MILLION OF CHLORINE AND ALLOW IT TO STAND FOR 3 HOURS OR BEFORE FLUSHING THOROUGHLY AND RETURNING TO SERVICE. FURNISH CLEAN WATER SAMPLES TO THE LOCAL AUTHORITY FOR TESTING AFTER THE LINES HAVE BEEN DISINFECTED. THIS PROCEDURE TO BE IN ACCORDANCE WITH 2021 INTERNATIONAL PLUMBING CODE.

CLEAN-UP

CLEAN ALL PLUMBING FIXTURES AND EQUIPMENT THOROUGHLY BEFORE FINAL INSPECTION LEAVING ALL READY FOR USE. .

OWNER'S MANUAL

PROVIDE THE OWNER AT THE COMPLETION OF THIS CONTRACT WITH AN "OWNER'S MANUAL" SO LABELED. THE MANUAL SHALL CONSIST OF A THREE-RING LOOSE-LEAF BINDER CONTAINING ALL PRINTED MATTER SUCH AS: GUARANTEE CARDS. CLEANING INSTRUCTIONS. NOTICES TO OWNER. OPERATING MANUALS, AND MAINTENANCE INSTRUCTIONS THAT MAY BE CONTAINED IN THE SHIPPING CARTONS OR EQUIPMENT HOUSINGS.

PLUMBING LEGEND

SAN	SANITARY SEWER PIPING
EX.SAN	EXISTING SANITARY SEWER PIPING
V	VENT PIPING
	DOMESTIC COLD WATER PIPING
	HOT WATER PIPING
	HOT WATER RETURN PIPING
	PIPE UP
	PIPE DROP
G	GAS PIPING
E	CAPPED END OF PIPE
FCO	FLOOR CLEAN OUT
	P-TRAP
S.O.V.	SHUT-OFF VALVE
CW	DOMESTIC COLD WATER
HD	HUB DRAIN
HW	DOMESTIC HOT WATER
HWR	DOMESTIC HOT WATER RETURN
HB	HOSE BIB
	GATE VALVE
	CHECK VALVE
	GAS SHUT-OFF VALVE
	GAS PRESSURE REGULATOR
	BALANCING VALVE
	WATER HAMMER ARRESTER
FD	FLOOR DRAIN
	POINT OF CONNECTION
	THERMOSTATIC MIXING VALVE

ENERGY CONSERVATION NOTES

1. AS PER 2021 INTERNATIONAL ENERGY CONSERVATION CODE C404.4, PIPING FROM A WATER HEATER TO THE TERMINATION OF HEATED WATER FIXTURE SUPPLY PIPE SHALL BE INSULATED IN ACCORDANCE WITH TABLE OF MINIMUM PIPE INSULATION THICKNESS C403.12.3

MINIMUM PIPE INSULATION THICKNESS					
FLUID OPERATING TEMPERATURE RANGE AND USAGE (°F)	INSULATION CONDUCTIVITY		NOMINAL PIPE OR TUBE SIZE (INCHES)		
	CONDUCTIVITY BTU- IN./ (H- FT2- °F)	MEAN RATING TEMPERATURE, °F	<1	1 to < 1½	1½ to < 4
141-200	0.25-0.29	125	1.5	1.5	2.0
105-140	0.21-0.28	100	1.0	1.0	1.5
40-60	0.21-0.27	75	0.5	0.5	1.0

2. HOT WATER SYSTEM PIPING IS DESIGNED AS PER MAXIMUM ALLOWED PIPE LENGTH METHOD AS PER 2021 INTERNATIONAL ENERGY CONSERVATION CODE C404.5.1. THE HOT WATER VOLUME FROM THE NEAREST SOURCE OF HEATED WATER TO THE TERMINATION OF THE FIXTURE SUPPLY PIPE SHALL BE AS PER MAXIMUM PIPING LENGTH TABLE.

NOMINAL PIPE SIZE (INCHES)	MIXIMUM PIPING LENGTH (FEET)	
	PUBLIC LAV	OTHER FIXTURES
⅜"	3'	50'
½"	2'	43'
¾"	0.5'	21'
1"	0.5'	13'
1¼"	0.5'	8'
1½"	0.5'	6'
2" OR LARGER	0.5'	4'

3. AS PER 2021 INTERNATIONAL ENERGY CONSERVATION CODE C404.6.1, AUTOMATIC CONTROLS SHALL BE INSTALLED THAT LIMITS THE OPERATION OF A RECIRCULATING PUMP AND THE SYSTEM RETURN PIPE SHALL BE A DEDICATED RETURN PIPE OR A COLD WATER SUPPLY PIPE. THE CONTROL SHALL LIMIT THE TEMPERATURE OF THE WATER ENTERING THE COLD-WATER PIPING TO 104°F (40°C).

PLUMBING EQUIPMENT SCHEDULE

Item No.	Qty.	Description	MANUFACTURER	MODEL	WATER Hot	WATER Cold	WASTE Direct	WASTE Indirect
1	3	LAVATORY	AMERICAN STANDARD	LUCERNE 0355.027			2"	
1A	3	LAVATORY FAUCET***	DELTA	B2510LF-SS	1/2"	1/2"		
	6	THERMAL MIXING VALVES	WATTS	LFMMV	1/2"	1/2"		
2	3	WATER CLOSET	AMERICAN STANDARD	MADERA 2857.016			4"	
	3	ELONGATED SEAT	AMERICAN STANDARD	EXTRA HD COMMERCIAL TOILET SEAT 5905.100				
	3	FLUSH VALVE	SLOAN	REGAL 111XL		1"		
3	1	URINAL	-	-		3/4"		
14	2	SWIM SUIT DRYER	SUITMATE	115V60HX UNIT				HD
17	1	DRINKING FOUNTAIN	ELKAY	EZSTL8WSLK		1/2"	1-1/2"	
18	1	COFFEE MACHINE	KEURIG	K150P		1/2"		
20	2	DROP-IN SINK	AMERICAN STANDARD	20SB8252283S.075			2"	
20A	2	SINK FAUCET***	AMERICAN STANDARD	4005F.002	1/2"	1/2"		
23	7	SHOWER***	MOEN	L2352	3/4"	3/4"		TD
	7	MIXING VALVE	MOEN	8370HD	1/2"	1/2"		
25	1	MOP SINK	MUSTEE	63M			3"**	
25A	1	MOP SINK FAUCET***	FIAT	830AA000	3/4"	3/4"		
26	1	WATER HEATER	SEE SCHEDULE	SEE SCHEDULE				
27	1	STACKABLE WASHER/DRYER	-	-	1/2"	1/2"		2"
FD	5	FLOOR DRAINS*	ZURN	ZS415 W/ TYPE BS STRAINER			3"	
HD	2	HUB DRAINS	--	--			3"	
TD		TRENCH DRAIN	STEGMEIER	FLOWMASTER A/T COMMERCIAL DRAIN				

*PROVIDE TRAP PRIMERS FOR ALL FLOOR DRAINS. **ADAPTOR REQUIRED. ***MIXING VALVE REQUIRED.

GENERAL NOTES

1. ALL FIXTURES MUST BE PROVIDED WITH READILY ACCESSIBLE STOPS AND APPROPRIATELY MARKED ACCESS PANELS. COORDINATE LOCATIONS WITH GENERAL CONTRACTOR PRIOR TO INSTALLATION.
2. FURNISH AND INSTALL APPROVED AIR CHAMBERS AT EACH PLUMBING FIXTURE GROUP AS PER CODE AND WITH GOOD ENGINEERING PRACTICE.
3. DIELECTRIC COUPLINGS ARE REQUIRED BETWEEN ALL DISSIMILAR METAL IN PIPING AND EQUIPMENT CONNECTIONS; EXCEPT AT WATER HEATER AS PER CODE.
4. ISOLATE COPPER PIPE FROM HANGER OR SUPPORTS WITH ISOLATOR PAD.
5. PROVIDE CHROME PLATED COMBINATION COVER PLATE AND CLEAN OUT PLUG OR ACCESS PANEL FOR ALL CLEANOUTS.
6. NO COMBUSTIBLE MATERIAL TO BE USED IN MECHANICAL ROOMS OR IN CEILING SPACES WHERE USED AS RETURN AIR PLENUMS.
7. NO WATER, SANITARY OR DRAINAGE PIPING PERMITTED IN ELECTRICAL OR ELEVATOR EQUIPMENT ROOMS.
8. CONDENSATE DRAIN LINES TO BE RUN UNDER SLAB IN PVC SCH40 PIPE AND STUBBED OUT OF WALL TO UNIT. TIE-IN OF A/C TO BE BY OTHERS. PVC PIPING WITH 1/2" THICK ARMAFLEX INSULATION MAY BE USED IN LOCATIONS WHERE ALLOWED BY LOCAL CODES. SEE PLUMBING DRAWINGS FOR SIZE AND LOCATION OF PIPING. PVC WILL BE MIN. SCHEDULE 40 FOR SIZE AND LOCATION OF PIPING. PVC WILL BE MIN. SCHEDULE 40.
9. PROVIDE ANGLE STOPS ON ALL WATER SERVICE LINES TO FIXTURES FOR INDIVIDUAL SHUT-OFF.
10. PLUMBING FIXTURES SHALL COMPLY WITH INTERNATIONAL 2021 INTERNATIONAL PLUMBING CODE.
11. WATER HAMMER ARRESTORS AS PER INTERNATIONAL 2021 INTERNATIONAL PLUMBING CODE.
12. PLUMBING CONTRACTOR TO PROVIDE ANTI-SCALDING VALVE FOR SHOWERS.
13. PLUMBING CONTRACTOR SHALL REVIEW WALL FINISHES @ LOCATION REQUIRING BARRIER-FREE COMPLIANCE (EXAMPLE: CENTER LINE TO TOILET).

SCOPE OF WORK

PROVIDE ALL PLUMBING FOR MODIFICATIONS TO INDOOR SWIMMING FACILITY INCLUDING ALL DOMESTIC WATER, SANITARY & GAS LINES AND CONNECT TO EXISTING UTILITIES. PROVIDE NEW WATER HEATER AND NEW SUMP PUMP.

COORDINATE WITH GC AND MECHANICAL CONTRACTOR TO PROVIDE CONDENSATE LINES FOR RTU & PU SYSTEM AND GAS FLUE FOR NEW WATER HEATER.

FIXTURE BRANCH SCHEDULES

FIXTURE	COLD WATER	HOT WATER	WASTE	VENT
WATER CLOSET(VALVE)	1"	--	4"	2"
LAVATORY	1/2"	1/2"	2"	1-1/2"
MOP SINK	3/4"	3/4"	3"	2"
FLOOR DRAIN	--	--	3"	2"
DRINKING FOUNTAIN	1/2"	--	1-1/2"	1-1/2"
WASHER/DRYER	1/2"	1/2"	2"	2"
HUB DRAIN	--	--	3"	2"
DROP-IN SINK	1/2"	1/2"	2"	1-1/2"

NY ENGINEERS

PROJECT

SAFE SPLASH/SWIMLABS

REVISIONS DATES:

SR. NO.	DETAIL	DATE

PLUMBING NOTES & SCHEDULES

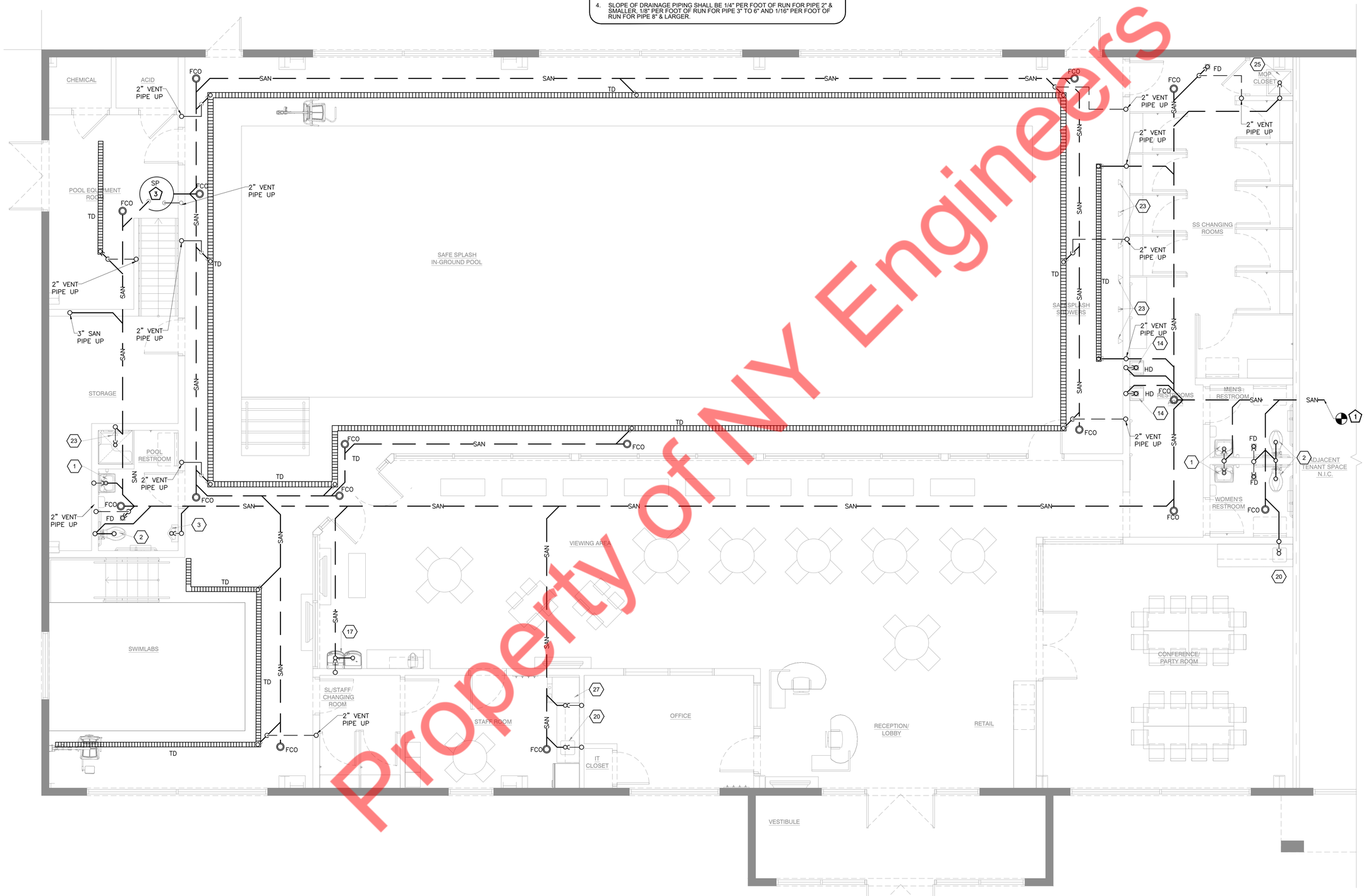
P-1

SANITARY KEYED NOTES

1. CONNECT NEW 4" SANITARY PIPE TO 6" EXISTING SANITARY MAIN LINE. CONTRACTOR TO FIELD VERIFY EXACT SIZE, LOCATION AND INVERT OF EXISTING SANITARY LINE.
2. COORDINATE WITH POOL VENDER/ ARCHITECT FOR EXACT LOCATION / DESIGN OF TRENCH DRAIN FROM THE POOL FILTRATION SYSTEM.
3. PROVIDE SUMP PUMP AS PER SCHEDULE. CONTRACTOR TO COORDINATE THE LOCATION OF SUMP PUMP WITH POOL EQUIPMENTS & FINALIZE THE LOCATION AS PER ARCHITECT AND POOL VENDOR.

GENERAL NOTES

1. SANITARY PIPING RUNNING UNDERGROUND SHOWN FOR REFERENCE. CONTRACTOR TO COORDINATE WITH EXISTING STRUCTURAL AND REROUTE AS REQUIRED TO AVOID ANY CONFLICTS AS PER FIELD CONDITIONS.
2. REFER TO SANITARY RISER ON PLUMBING SHEET P-5 FOR SANITARY & VENT ROUTING AND PIPE SIZING.
3. PROVIDE ACCESS PANELS FOR CLEAN-OUTS AS REQUIRED.
4. SLOPE OF DRAINAGE PIPING SHALL BE 1/4" PER FOOT OF RUN FOR PIPE 2" & SMALLER, 1/8" PER FOOT OF RUN FOR PIPE 3" TO 6" AND 1/16" PER FOOT OF RUN FOR PIPE 8" & LARGER.



SANITARY PLAN | SCALE 1/14" = 1'-0" | 1

NY ENGINEERS

PROJECT

SAFE SPLASH/SWIMLABS

REVISIONS DATES:

SR. NO.	DETAIL	DATE

PLUMBING SANITARY PLAN & NOTES

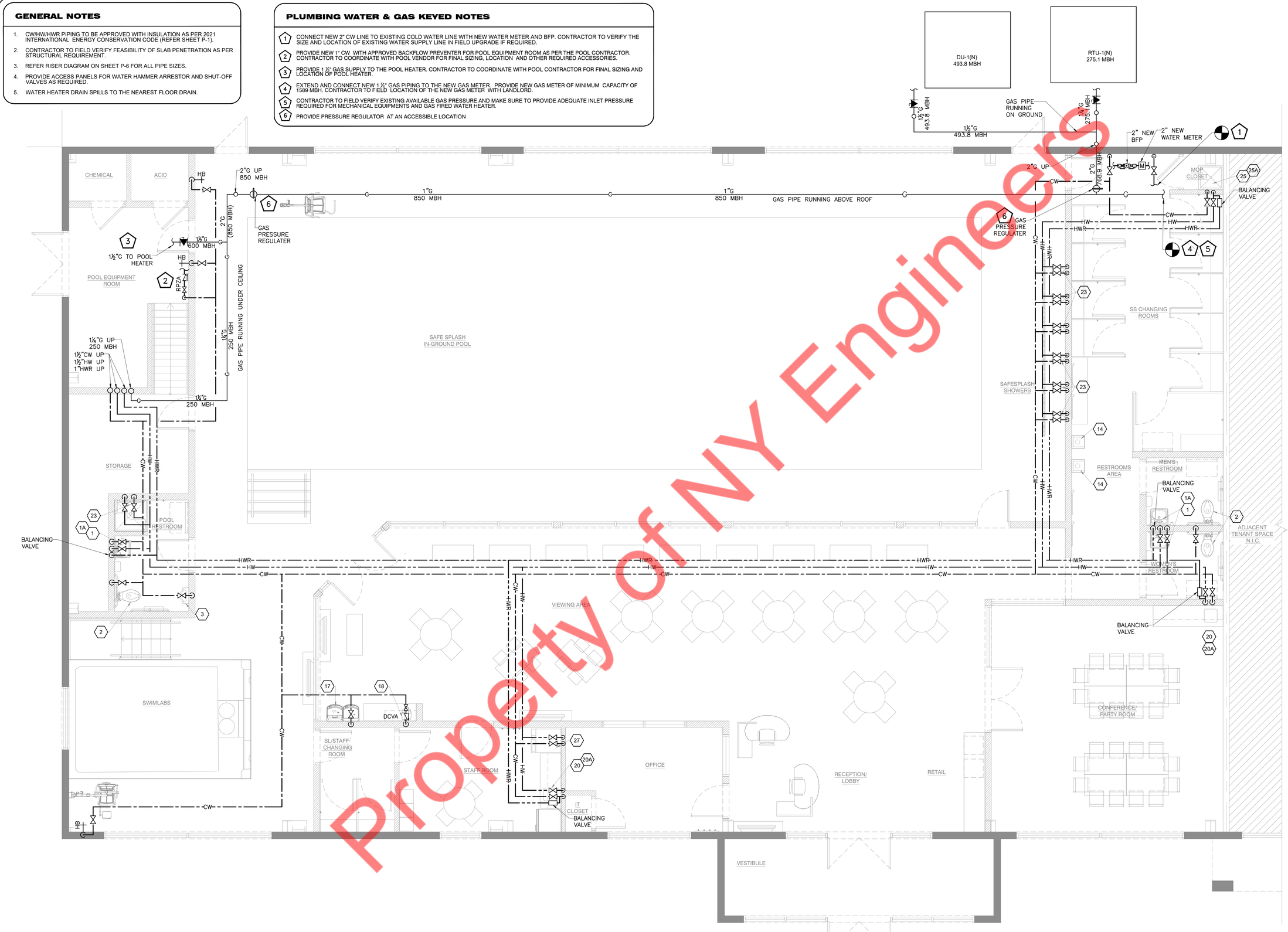
P-2

GENERAL NOTES

1. CW/HW/HWR PIPING TO BE APPROVED WITH INSULATION AS PER 2021 INTERNATIONAL ENERGY CONSERVATION CODE (REFER SHEET P-1).
2. CONTRACTOR TO FIELD VERIFY FEASIBILITY OF SLAB PENETRATION AS PER STRUCTURAL REQUIREMENT.
3. REFER RISER DIAGRAM ON SHEET P-6 FOR ALL PIPE SIZES.
4. PROVIDE ACCESS PANELS FOR WATER HAMMER ARRESTOR AND SHUT-OFF VALVES AS REQUIRED.
5. WATER HEATER DRAIN SPILLS TO THE NEAREST FLOOR DRAIN.

PLUMBING WATER & GAS KEYED NOTES

1. CONNECT NEW 2" CW LINE TO EXISTING COLD WATER LINE WITH NEW WATER METER AND BFP. CONTRACTOR TO VERIFY THE SIZE AND LOCATION OF EXISTING WATER SUPPLY LINE IN FIELD UPGRADE IF REQUIRED.
2. PROVIDE NEW 1" CW WITH APPROVED BACKFLOW PREVENTER FOR POOL EQUIPMENT ROOM AS PER THE POOL CONTRACTOR. CONTRACTOR TO COORDINATE WITH POOL VENDOR FOR FINAL SIZING, LOCATION AND OTHER REQUIRED ACCESSORIES.
3. PROVIDE 1 ½" GAS SUPPLY TO THE POOL HEATER. CONTRACTOR TO COORDINATE WITH POOL CONTRACTOR FOR FINAL SIZING AND LOCATION OF POOL HEATER.
4. EXTEND AND CONNECT NEW 1 ¼" GAS PIPING TO THE NEW GAS METER. PROVIDE NEW GAS METER OF MINIMUM CAPACITY OF 1589 MBH. CONTRACTOR TO FIELD LOCATION OF THE NEW GAS METER WITH LANDLORD.
5. CONTRACTOR TO FIELD VERIFY EXISTING AVAILABLE GAS PRESSURE AND MAKE SURE TO PROVIDE ADEQUATE INLET PRESSURE REQUIRED FOR MECHANICAL EQUIPMENTS AND GAS FIRED WATER HEATER.
6. PROVIDE PRESSURE REGULATOR AT AN ACCESSIBLE LOCATION



WATER & GAS PLAN | SCALE 1/14" = 1'-0" | 1

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PLUMBING WATER/GAS PLAN & NOTES

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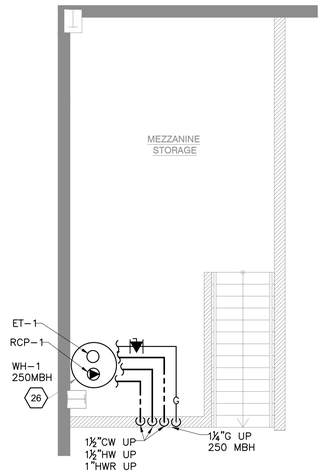
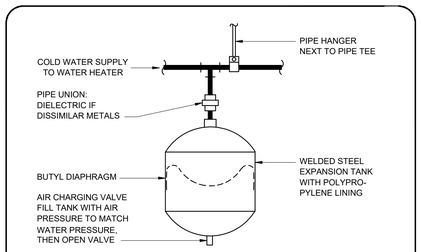
MEZZANINE STORAGE SANITARY PLAN | SCALE 1/14" = 1'-0" | 1

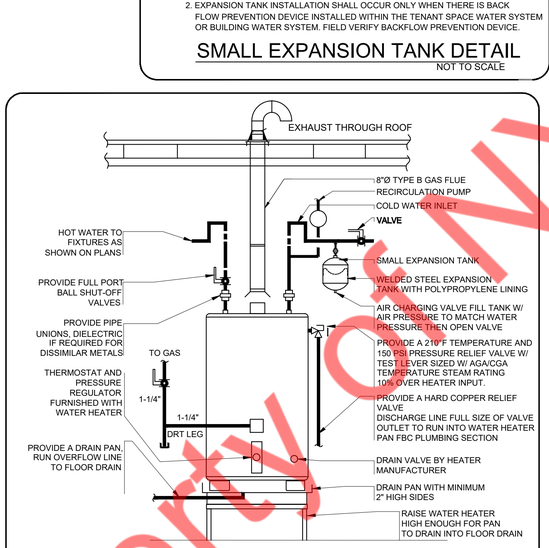


MEZZANINE STORAGE WATER & GAS PLAN | SCALE 1/14" = 1'-0" | 1



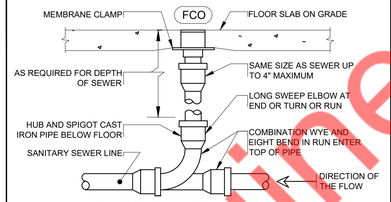
NOTES:
1. PIPING ARRANGEMENT SHOWN IS SCHEMATIC. ADJUST TO SUIT FIELD CONDITIONS. MAKE PIPE SAME SIZE AS TANK FITTING. FOLLOW MANUFACTURER'S INSTRUCTIONS FOR INSTALLATION PROCEDURE. VERIFY PROPER OPERATION WHEN INSTALLED.
2. EXPANSION TANK INSTALLATION SHALL OCCUR ONLY WHEN THERE IS BACK FLOW PREVENTION DEVICE INSTALLED WITHIN THE TENANT SPACE WATER SYSTEM OR BUILDING WATER SYSTEM. FIELD VERIFY BACKFLOW PREVENTION DEVICE.

SMALL EXPANSION TANK DETAIL
NOT TO SCALE



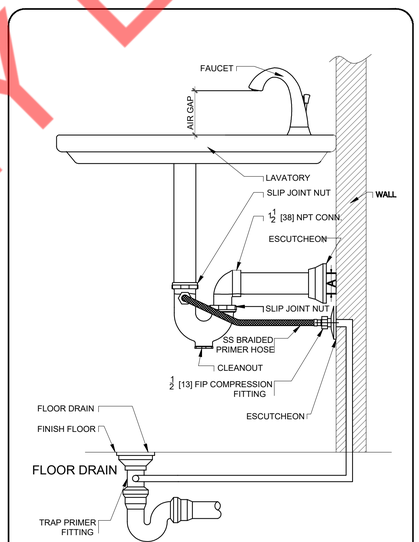
WATER HEATER DETAIL (WH-1)
NOT TO SCALE

WATER HEATER DETAIL NOTES
1) PIPING ARRANGEMENT SHOWN IS SCHEMATIC
2) ADJUST TO SUIT FIELD CONDITIONS
3) REFER ISOMETRIC RISER FOR PIPES SIZES
4) SET HEATER THERMOSTAT AT 140° F
5) GAS WATER HEATER SHALL BE 100 GALLONS

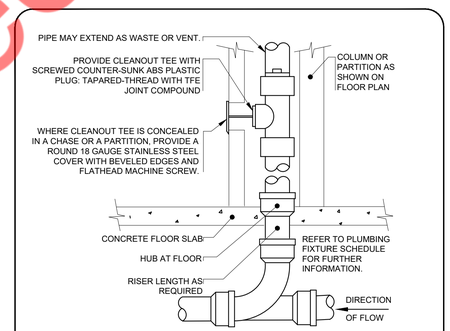


FLOOR CLEANOUT
NOT TO SCALE

FLOOR CLEANOUT DETAIL NOTES
1) LOCATE CLEANOUT AT THIS LOCATIONS:
A) BUILDING EXIT
B) AT TURNS OF PIPES GREATER THAN 45 DEGREES
C) AT 50' INTERVALS ON STRAIGHT RUNS
D) WHERE IS SHOWN ON PLANS
E) WHERE IS 18" CLEAR AROUND

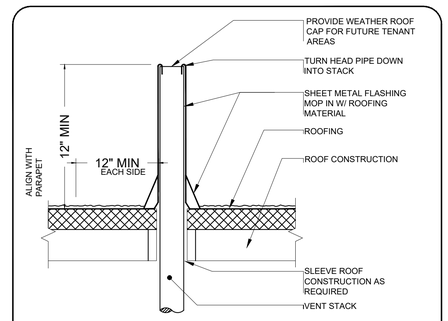


TRAP RESEAL DETAIL
NOT TO SCALE



WALL CLEANOUT
NOT TO SCALE

WALL CLEANOUT DETAIL NOTES
1) PROVIDE WCO WHERE SHOWN ON PLANE, AND ON SANITARY WASTE BRANCHES NOT SERVED WITH A FLOOR CLEANOUT
2) LOCATE ABOVE FIXTURE FLOOR RIM WITHIN 4' OF FLOOR.
3) CONSULT LOCAL CODES FOR OTHER WCO REQUIREMENTS.
4) LONG SWEEP AT END OF LINE OR COMBINATION WYE AND EIGHT BEND IN RUN OF LINE
5) CLEAN OUT FACE SHALL BE WITHIN 4" OF WALL SURFACE. PROVIDE A PIPE EXTENSION IF REQUIRED



VENT THRU ROOF DETAIL
NOT TO SCALE

VENT THRU ROOF DETAIL NOTE
ANY VENT LINE WITHIN 10'-0" OF ANY DOOR, WINDOW, OR EXHAUST OPENING SHALL EXTEND NOT LESS THAN 3'-0" ABOVE SUCH OPENING

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PLUMBING
MEZZANINE
STORAGE PLAN &
DETAILS

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SANITARY KEYED NOTES

1. CONNECT NEW 4" SANITARY PIPE TO 6" EXISTING SANITARY MAIN LINE. CONTRACTOR TO FIELD VERIFY EXACT SIZE, LOCATION AND INVERT OF EXISTING SANITARY LINE.
2. COORDINATE WITH POOL VENDER/ ARCHITECT FOR EXACT LOCATION / DESIGN OF TRENCH DRAIN FROM THE POOL FILTRATION SYSTEM.
3. PROVIDE SUMP PUMP AS PER SCHEDULE. CONTRACTOR TO COORDINATE THE LOCATION OF SUMP PUMP WITH POOL EQUIPMENTS & FINALIZE THE LOCATION AS PER ARCHITECT AND POOL VENDOR.

SUMP PUMP SCHEDULE

MANUFACTURER & MODEL	LIBERTY PUMPS 250 SERIES-257 MODEL
EQUIPMENT TAG	SP
STATUS	NEW
QUANTITY	2 PUMPS (1 SET)
SYSTEM	DUPLEX
GPM	35 EACH
HEAD	11 FT EACH
HP	1/3 HP EACH
V/PH/HZ	115/1/60
AMPS	5.2 EACH
RPM	3450 EACH
LOCATION	POOL EQUIPMENT ROOM

NOTE:
1. PROVIDE LIBERTY MANUFACTURER FIBERGLASS BASIN OF 36"(DIA) & 60"(H) WITH APPROVED ACCESS COVER.
2. PUMP AND BASIN INSTALLATION SHOULD BE MADE AS PER MANUFACTURER INSTRUCTIONS WITH ALL REQUIRED ACCESSORIES.
3. PUMP SHALL BE CONTROLLED WITH NEMA 1 INDOOR DUPLEX CONTROL PANEL.
4. MAXIMUM OPERATING TEMPERATURE OF 140°F.

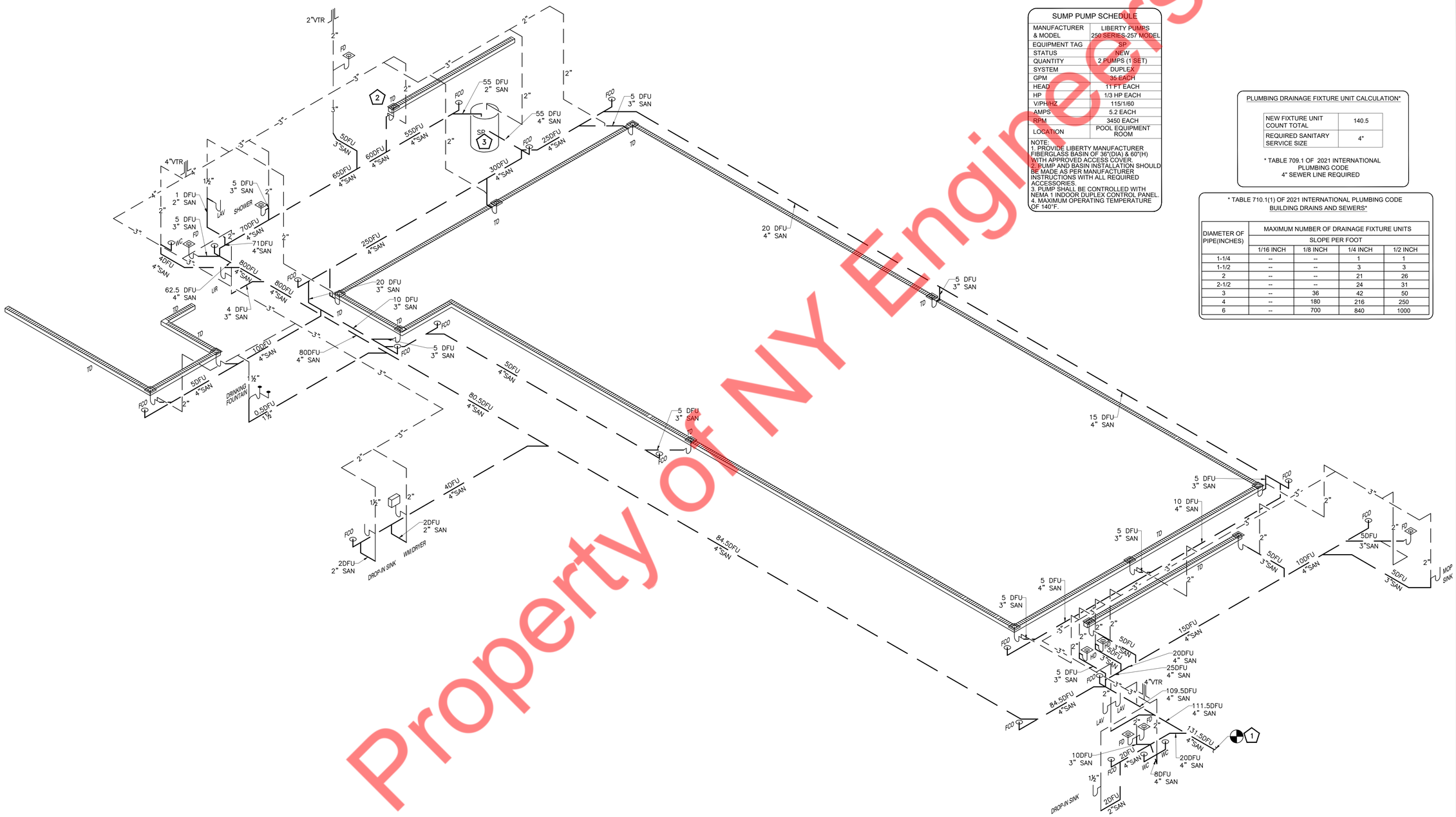
PLUMBING DRAINAGE FIXTURE UNIT CALCULATION*

NEW FIXTURE UNIT COUNT TOTAL	140.5
REQUIRED SANITARY SERVICE SIZE	4"

* TABLE 709.1 OF 2021 INTERNATIONAL PLUMBING CODE
4" SEWER LINE REQUIRED

* TABLE 710.1(1) OF 2021 INTERNATIONAL PLUMBING CODE
BUILDING DRAINS AND SEWERS*

DIAMETER OF PIPE(INCHES)	MAXIMUM NUMBER OF DRAINAGE FIXTURE UNITS SLOPE PER FOOT			
	1/16 INCH	1/8 INCH	1/4 INCH	1/2 INCH
1-1/4	--	--	1	1
1-1/2	--	--	3	3
2	--	--	21	26
2-1/2	--	--	24	31
3	--	36	42	50
4	--	180	216	250
6	--	700	840	1000



SANITARY RISER | SCALE N.T.S. | 1

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SANITARY RISER

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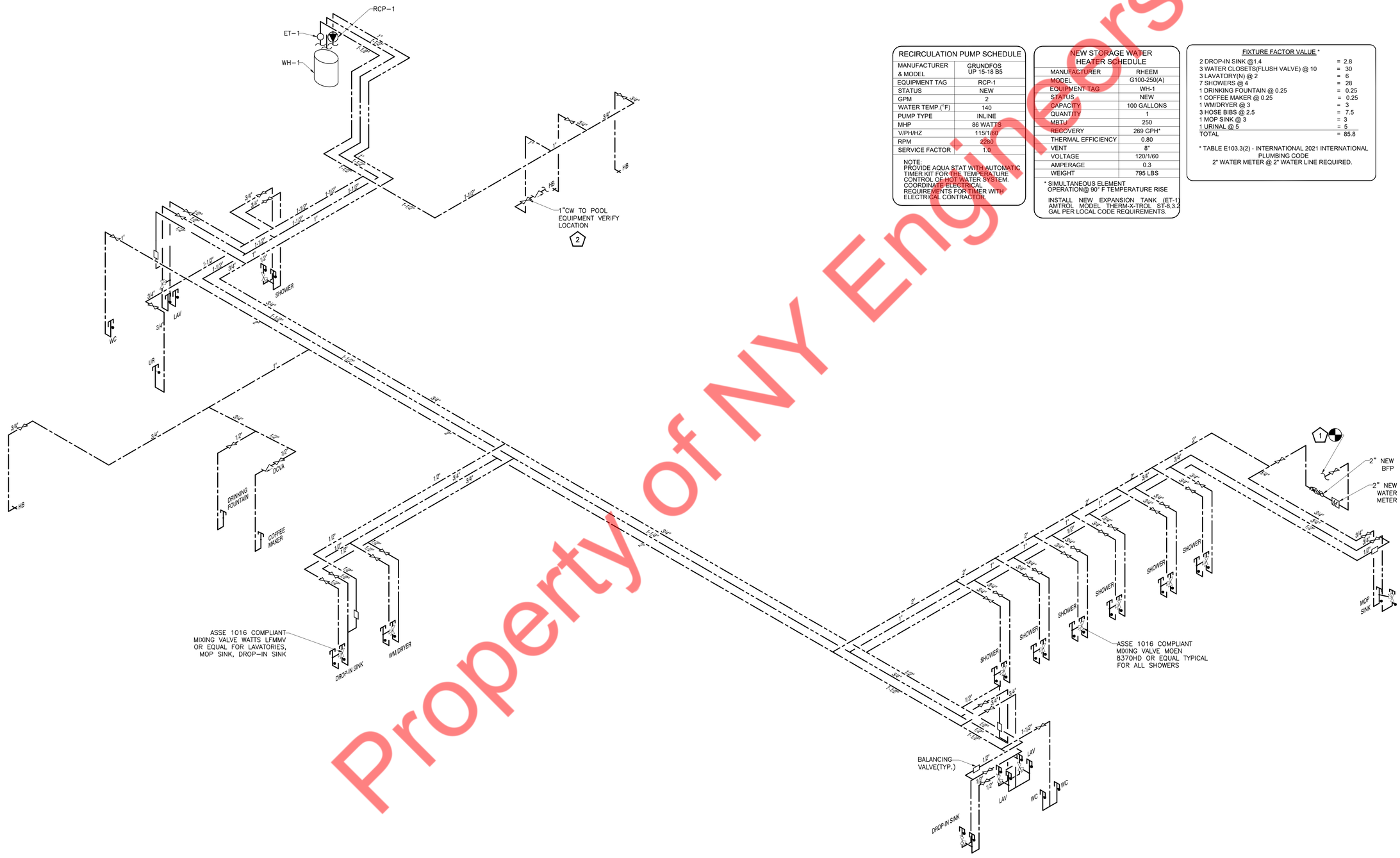
PLUMBING WATER KEYED NOTES

1. CONNECT NEW 2" CW LINE TO EXISTING COLD WATER LINE WITH NEW WATER METER AND BFP. CONTRACTOR TO VERIFY THE SIZE AND LOCATION OF EXISTING WATER SUPPLY LINE IN FIELD UPGRADE IF REQUIRED.
2. PROVIDE NEW 1" CW WITH APPROVED BACKFLOW PREVENTER FOR POOL EQUIPMENT ROOM AS PER THE POOL CONTRACTOR. CONTRACTOR TO COORDINATE WITH POOL VENDOR FOR FINAL SIZING, LOCATION AND OTHER REQUIRED ACCESSORIES.



RECIRCULATION PUMP SCHEDULE

MANUFACTURER & MODEL	GRUNDFOS UP 15-18 B5
EQUIPMENT TAG	RCP-1
STATUS	NEW
GPM	2
WATER TEMP.(°F)	140
PUMP TYPE	INLINE
MHP	86 WATTS
V/PH/HZ	115/1/60
RPM	2280
SERVICE FACTOR	1.0

NOTE:
PROVIDE AQUA STAT WITH AUTOMATIC TIMER KIT FOR THE TEMPERATURE CONTROL OF HOT WATER SYSTEM. COORDINATE ELECTRICAL REQUIREMENTS FOR TIMER WITH ELECTRICAL CONTRACTOR.

NEW STORAGE WATER HEATER SCHEDULE

MANUFACTURER	RHEEM
MODEL	G100-250(A)
EQUIPMENT TAG	WH-1
STATUS	NEW
CAPACITY	100 GALLONS
QUANTITY	1
MBTU	250
RECOVERY	269 GPH*
THERMAL EFFICIENCY	0.80
VENT	8"
VOLTAGE	120/1/60
AMPERAGE	0.3
WEIGHT	795 LBS

* SIMULTANEOUS ELEMENT OPERATION@ 90° F TEMPERATURE RISE

INSTALL NEW EXPANSION TANK (ET-1) AMTROL MODEL THERM-X-TROL ST-8,3.2 GAL PER LOCAL CODE REQUIREMENTS.

FIXTURE FACTOR VALUE *

2 DROP-IN SINK @1.4	=	2.8
3 WATER CLOSETS(FLUSH VALVE) @ 10	=	30
3 LAVATORY(N) @ 2	=	6
7 SHOWERS @ 4	=	28
1 DRINKING FOUNTAIN @ 0.25	=	0.25
1 COFFEE MAKER @ 0.25	=	0.25
1 WM/DRYER @ 3	=	3
3 HOSE BIBS @ 2.5	=	7.5
1 MOP SINK @ 3	=	3
1 URINAL @ 5	=	5
TOTAL	=	85.8

* TABLE E103.3(2) - INTERNATIONAL 2021 INTERNATIONAL PLUMBING CODE
2" WATER METER @ 2" WATER LINE REQUIRED.

WATER RISER | SCALE N.T.S. | 1

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WATER RISER

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GAS PIPING KEYED NOTES

1. PROVIDE 1 ½" GAS SUPPLY TO THE POOL HEATER. CONTRACTOR TO COORDINATE WITH POOL CONTRACTOR FOR FINAL SIZING AND LOCATION OF POOL HEATER.
2. EXTEND AND CONNECT NEW 1 ½" GAS PIPING TO THE NEW GAS METER. PROVIDE NEW GAS METER OF MINIMUM CAPACITY OF 1589 MBH. CONTRACTOR TO FIELD LOCATION OF THE NEW GAS METER WITH LANDLORD.
3. CONTRACTOR TO FIELD VERIFY EXISTING AVAILABLE GAS PRESSURE AND MAKE SURE TO PROVIDE ADEQUATE INLET PRESSURE REQUIRED FOR MECHANICAL EQUIPMENTS AND GAS FIRED WATER HEATER.
4. PROVIDE PRESSURE REGULATOR AT AN ACCESSIBLE LOCATION

NATURAL GAS PIPING SYSTEM

PROVIDE A COMPLETE GAS PIPING SYSTEM TO SERVE GAS EQUIPMENT FURNISHED BY OTHERS, AS NOTED ON THE DRAWINGS. PROVIDE EITHER THREADED STEEL OR MALLEABLE IRON PIPE WITH MALLEABLE FITTINGS OR WELDED STEEL. PROVIDE ALL UNIONS, SHUT-OFF VALVES AND DIRT LEGS REQUIRED BY NFPA-54 AND GOVERNING LOCAL CODES AND AT EACH GAS APPLIANCE CONNECTION. PROVIDE ALL TESTS, METERS, INSPECTIONS, HANGERS AND EQUIPMENT CONNECTIONS REQUIRED FOR A COMPLETE AND OPERATING SYSTEM.

NOTES:

1. GAS PIPING TO BE SCHEDULE 40 STEEL PIPE W/125 CAST IRON SCREWD FITTINGS
2. GAS SYSTEM TO BE INSTALLED BY QUALIFIED LICENSED CONTRACTOR.
3. VERIFY EQUIPMENT BTU PRIOR TO INSTALLATION. ADJUST PIPE SIZE ACCORDING TO 2021 INTERNATIONAL FUEL GAS CODE TABLE 402.4(2) AND 402.4(5).

GAS PIPE SIZING PER TABLE 402.4(2) AND 402.4(5) 2021 INTERNATIONAL FUEL GAS CODE

HIGH PRESSURE SYSTEM (TABLE 402.4(5))

INLET PRESSURE - 2.0PSI

PRESSURE DROP - 1.0PSI

LONGEST LENGTH-APPROX. 200'

LOW PRESSURE SYSTEM (TABLE 402.4(2))

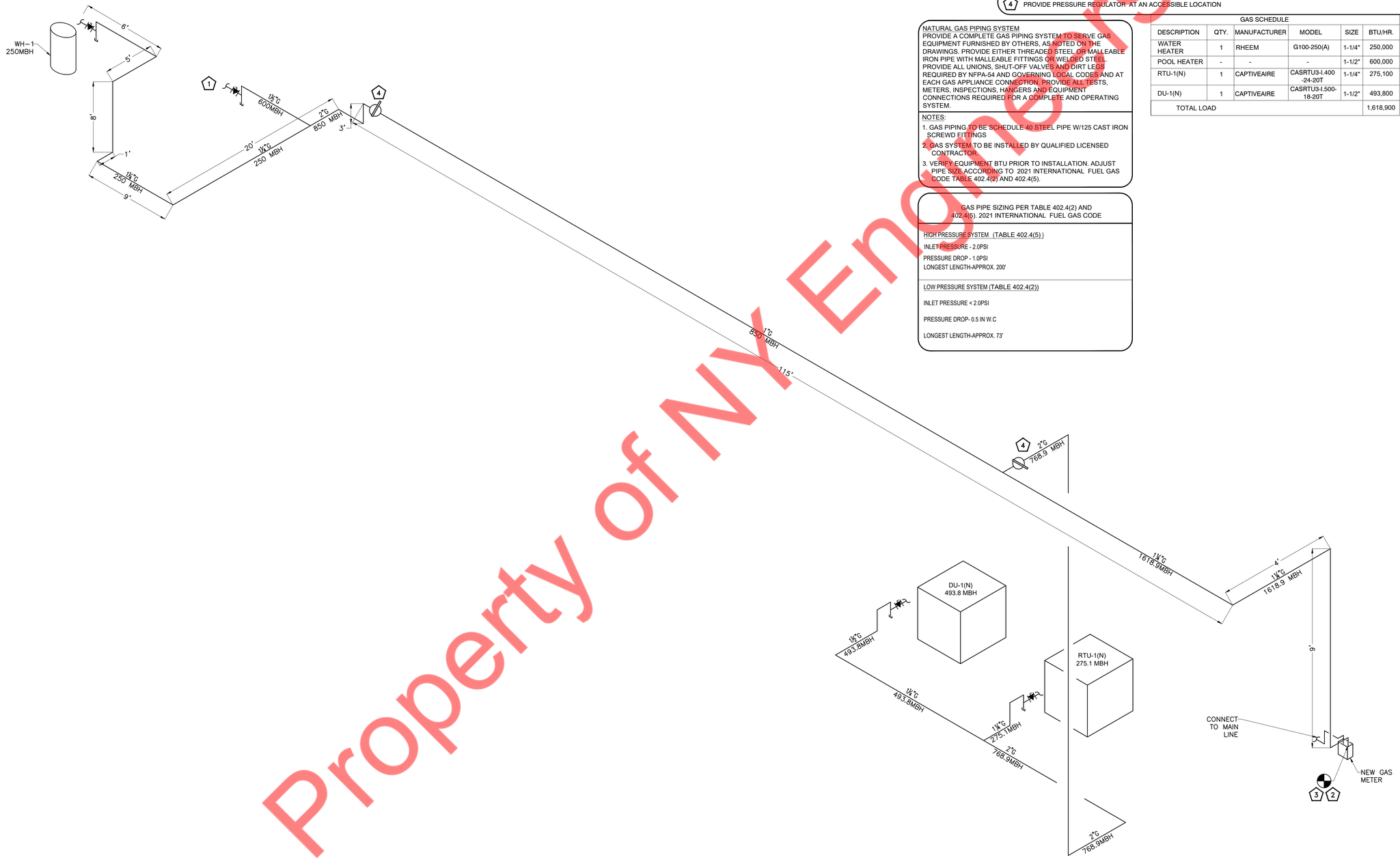
INLET PRESSURE < 2.0PSI

PRESSURE DROP- 0.5 IN W.C

LONGEST LENGTH-APPROX. 73'

GAS SCHEDULE

DESCRIPTION	QTY.	MANUFACTURER	MODEL	SIZE	BTU/HR.
WATER HEATER	1	RHEEM	G100-250(A)	1-1/4"	250,000
POOL HEATER	-	-	-	1-1/2"	600,000
RTU-1(N)	1	CAPTIVEAIRE	CASRTU3-I.400 -24-20T	1-1/4"	275,100
DU-1(N)	1	CAPTIVEAIRE	CASRTU3-I.500-18-20T	1-1/2"	493,800
TOTAL LOAD					1,618,900



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