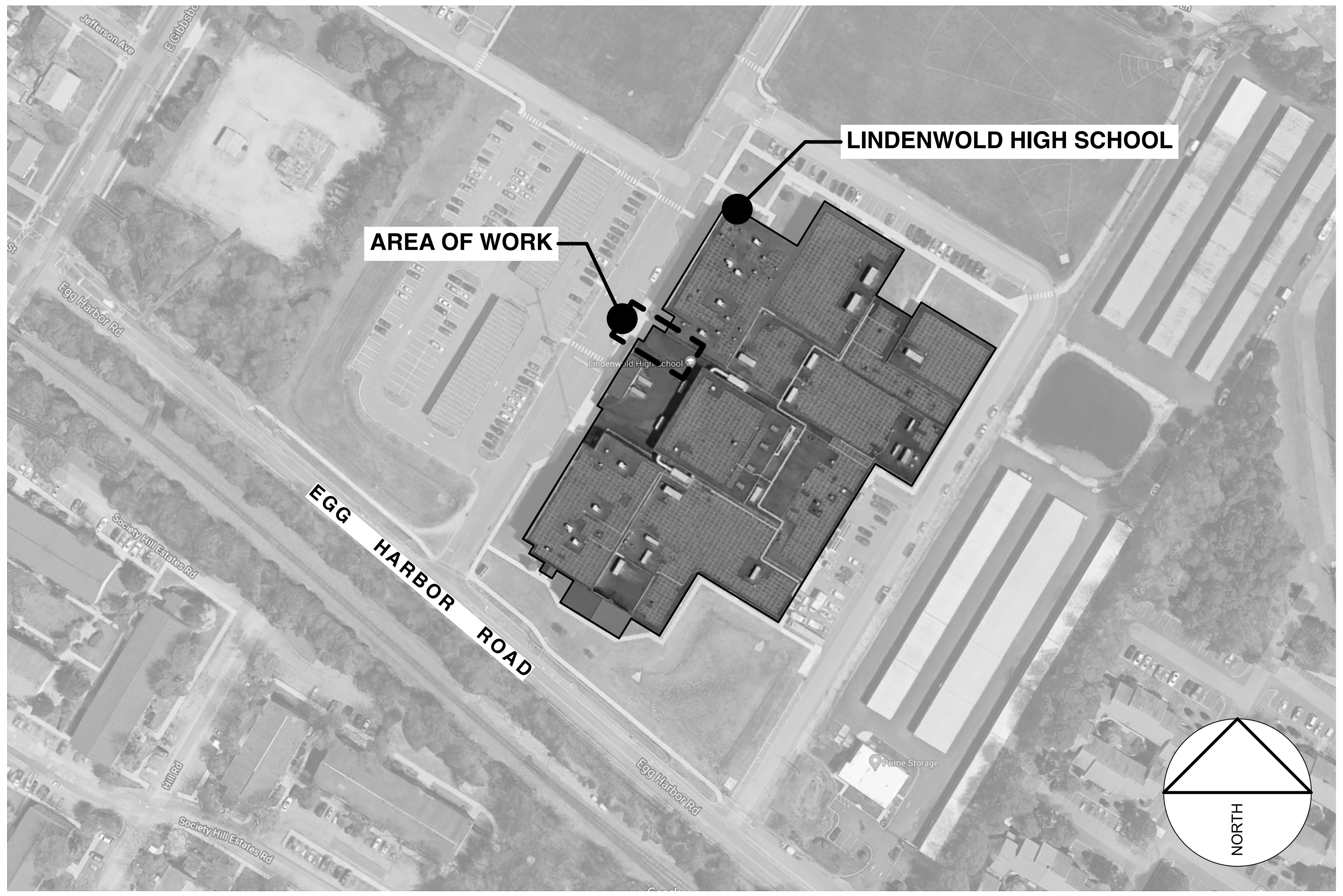
BUILDING ENTRANCES SECURITY ENHANCEMENT
LINDENWOLD HIGH SCHOOL

BLOCK 244, LOT 3
801 EGG HARBOR ROAD
LINDENWOLD, NJ 08021
NJDOE STATE PROJECT #2670-005-19-1000



OWNER:

LINDENWOLD BOE
801 EGG HARBOR ROAD
LINDENWOLD, NJ 08021
856-783-0276, FAX 856-741-0166

ARCHITECT:

REGAN YOUNG ENGLAND BUTERA, PC.
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609-265-2652, FAX 609-265-0333

MPE ENGINEER:

KELTER & GILLIGO CONSULTING ENGINEERS
14 WASHINGTON STREET, SUITE 221
PRINCETON JUNCTION, NJ 08550-1028
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SUBCODES

THE FOLLOWING SUBCODES AS ADOPTED BY THE NEW JERSEY UNIFORM CONSTRUCTION CODE (NJAC 5:23 et seq.) SHALL APPLY TO THIS PROJECT.

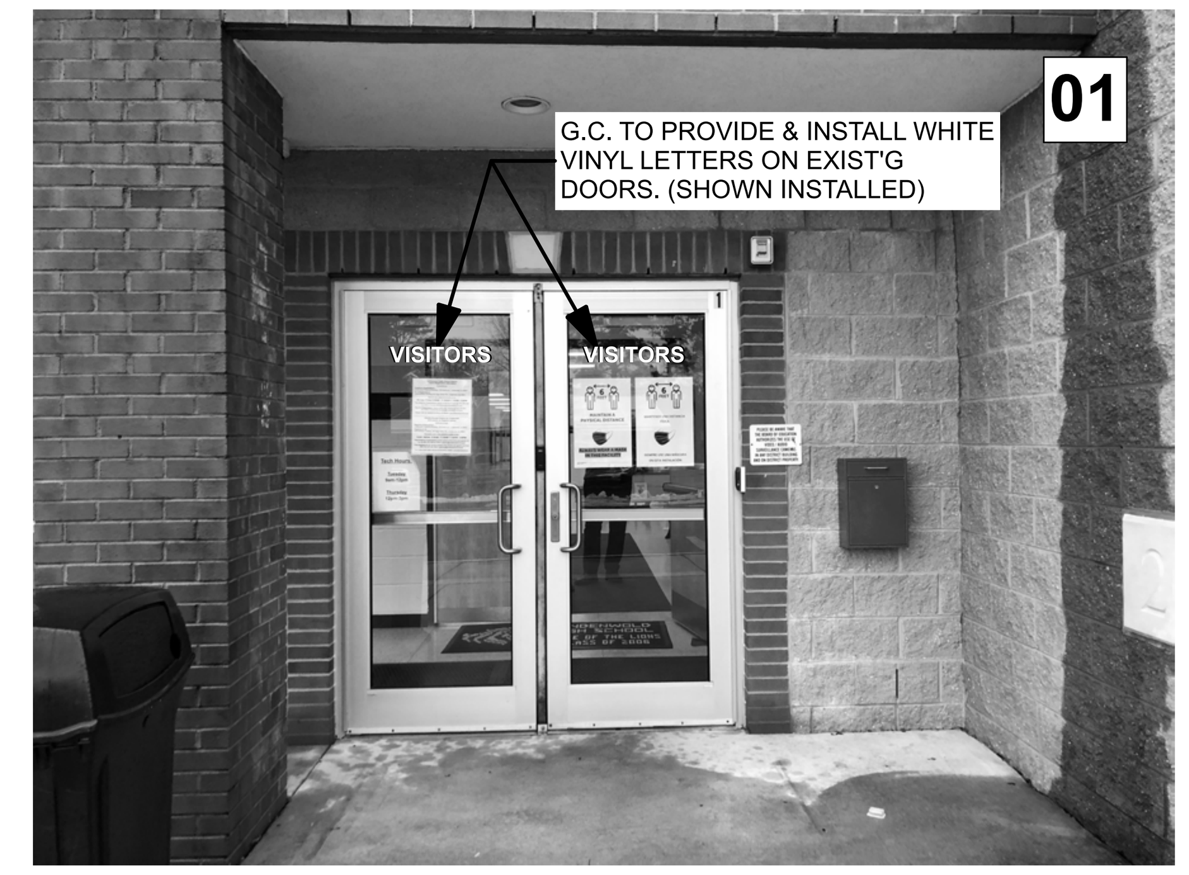
SUBCODE	NATIONAL MODEL CODE	UCC REFERENCE
BUILDING	INTERNATIONAL BUILDING CODE NJ ED/2018	NJAC 5:23-3.14
PLUMBING	NATIONAL PLUMBING CODE /2018	NJAC 5:23-3.15
ELECTRICAL	NATIONAL ELECTRICAL CODE /2017	NJAC 5:23-3.16
ENERGY	ASHRAE 90.1-2016	NJAC 5:23-3.18
MECHANICAL	INTERNATIONAL MECHANICAL CODE /2018	NJAC 5:23-3.20
FUEL GAS	INTERNATIONAL FUEL GAS CODE /2018	NJAC 5:23-3.22
REHABILITATION	REHABILITATION SUBCODE RENOVATION 6.5 AND ALTERATION 6.6	NJAC 5:23-6
BARRIER FREE	ICC/ANSI A117.1-2009	NJAC 5:23-7

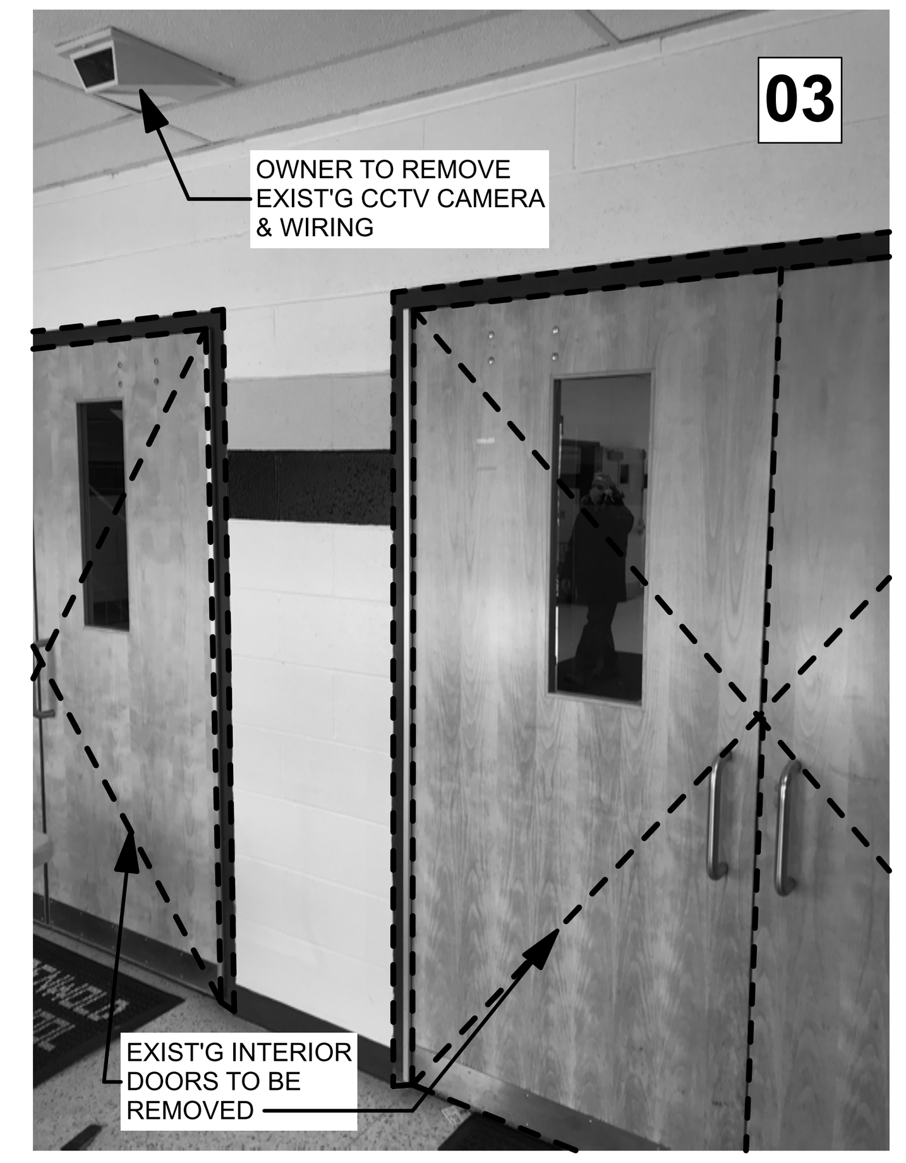
CONSTRUCTION TYPE: IIB
USE GROUP: E

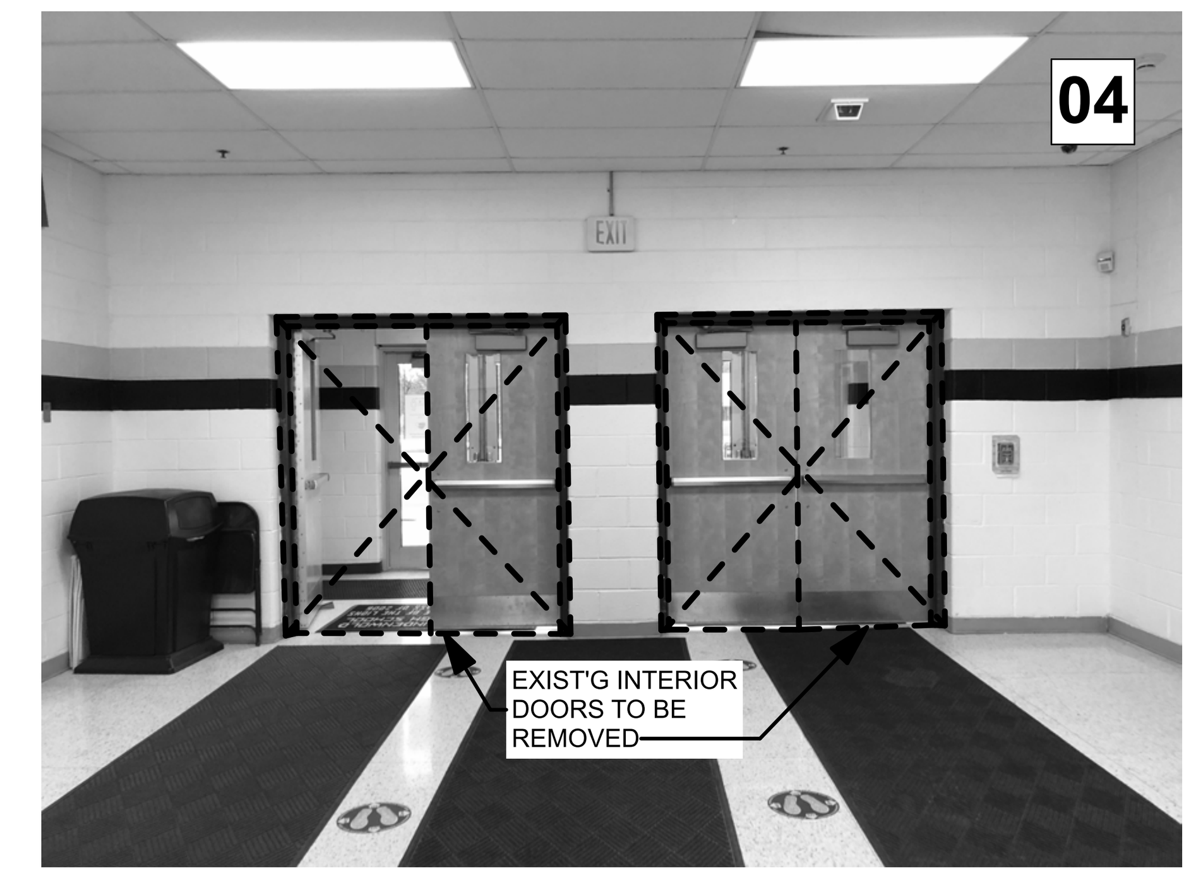
LIST OF DRAWINGS:

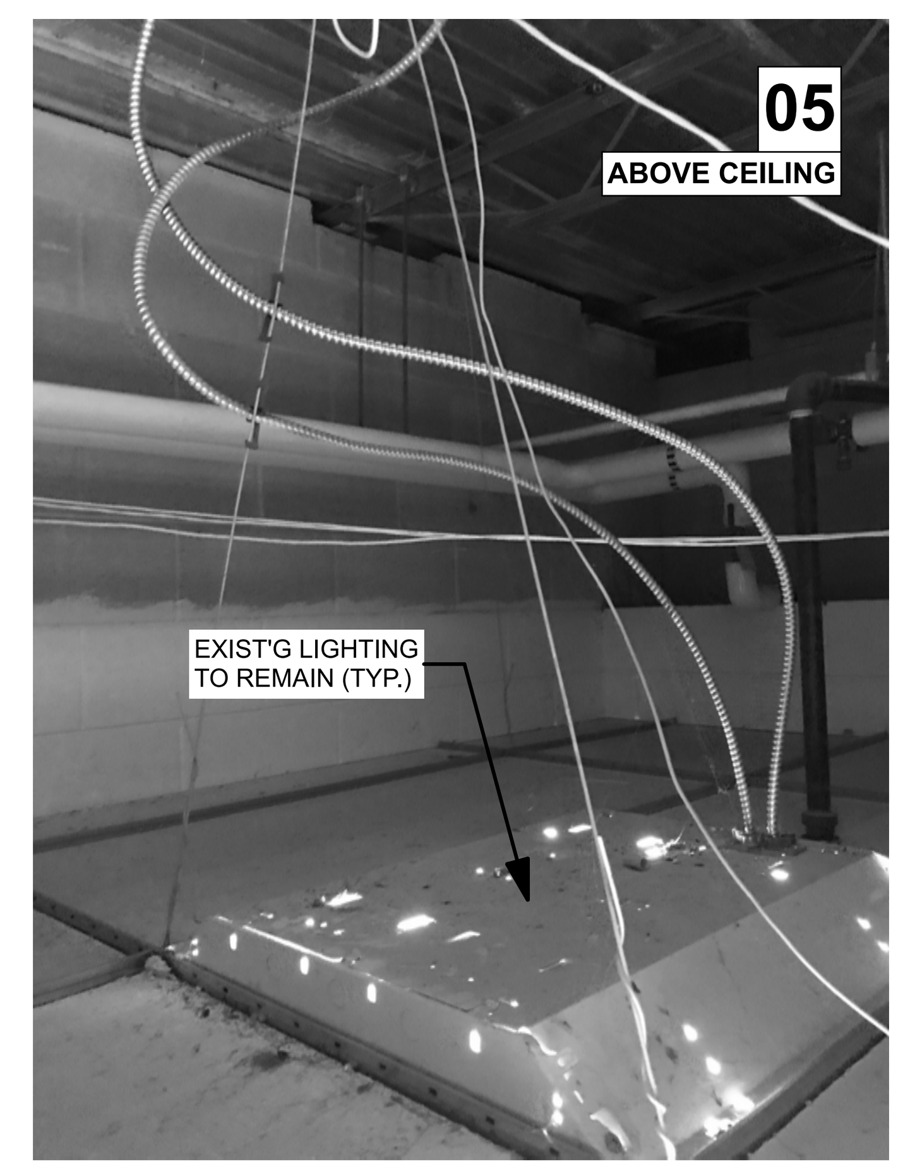
All Contractors shall examine all drawings indicated herein for required coordination between different trades and/or for work included in other sections of the Project Manual that may pertain to their respective contract.

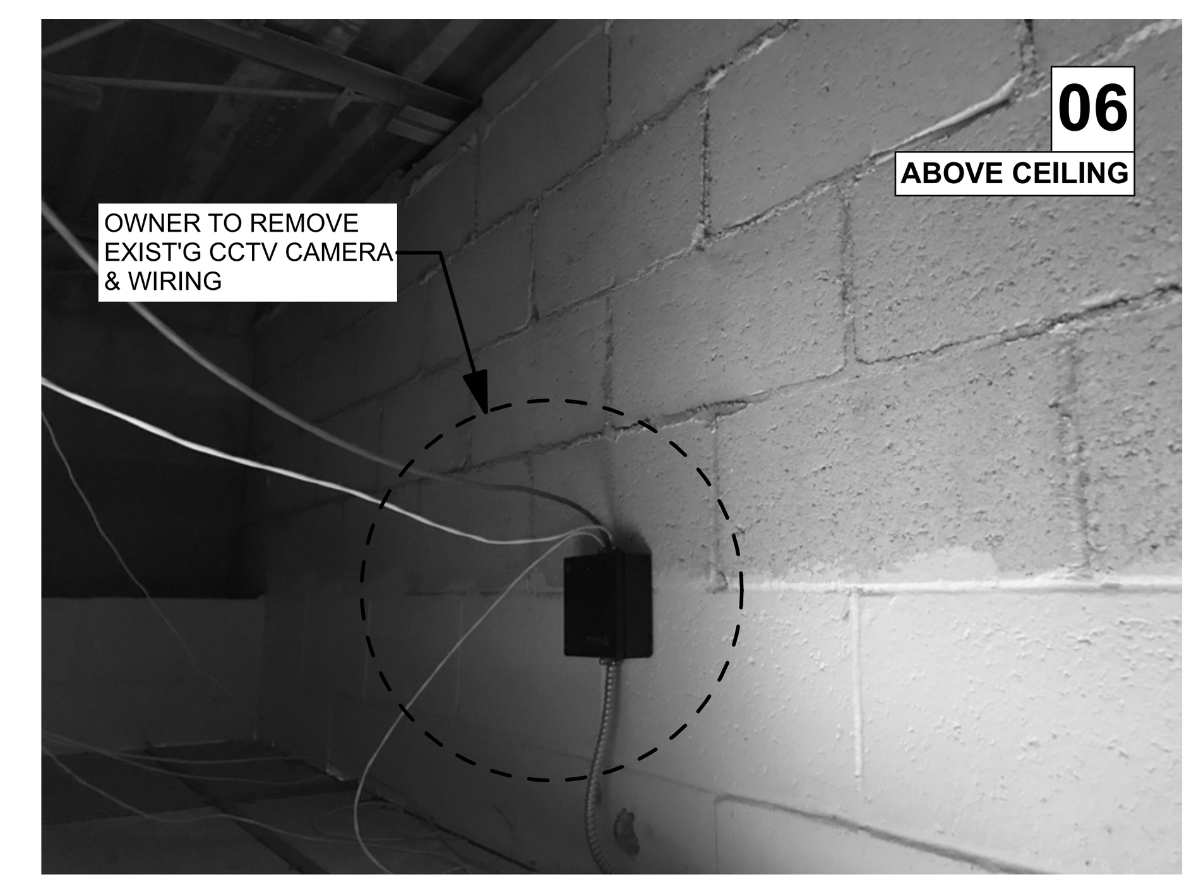
CS	COVER SHEET
A100	DEMO & NEW WORK PLANS / DETAILS
E100	PARTIAL FLOOR PLAN, SCHEDULE & SYMBOLS LIST - ELECTRICAL
E200	SPECIFICATIONS & SCHEDULE - ELECTRICAL











EXIST'G CONDITIONS PHOTOS

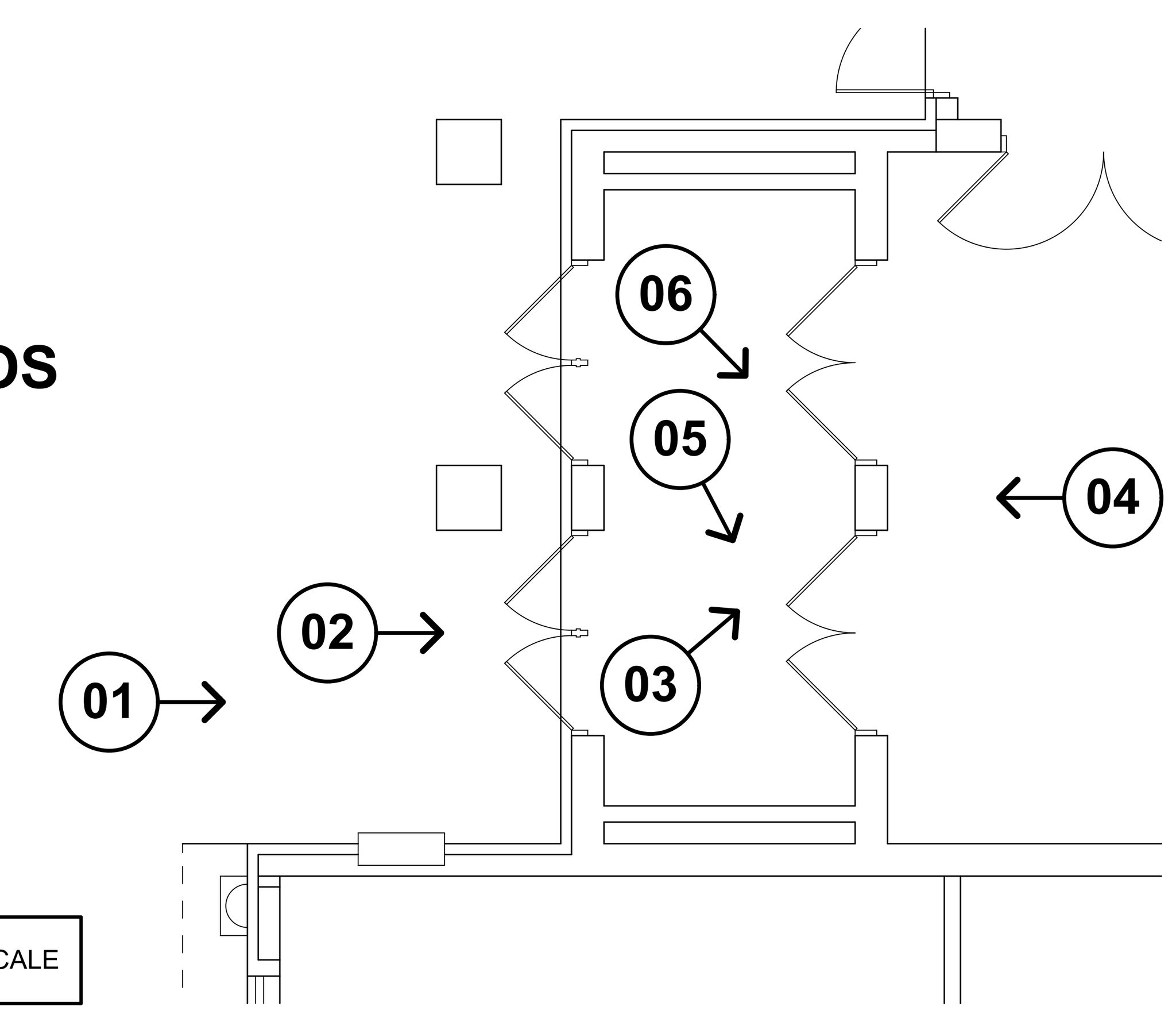


PHOTO LOCATOR PLAN NO SCALE

PRINT DATE: 3/12/21

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NJDOE SP #2670-005-19-1000

BUILDING ENTRANCES SECURITY ENHANCEMENT
LINDENWOLD HIGH SCHOOL
801 EGG HARBOR ROAD
LINDENWOLD, NJ 08021

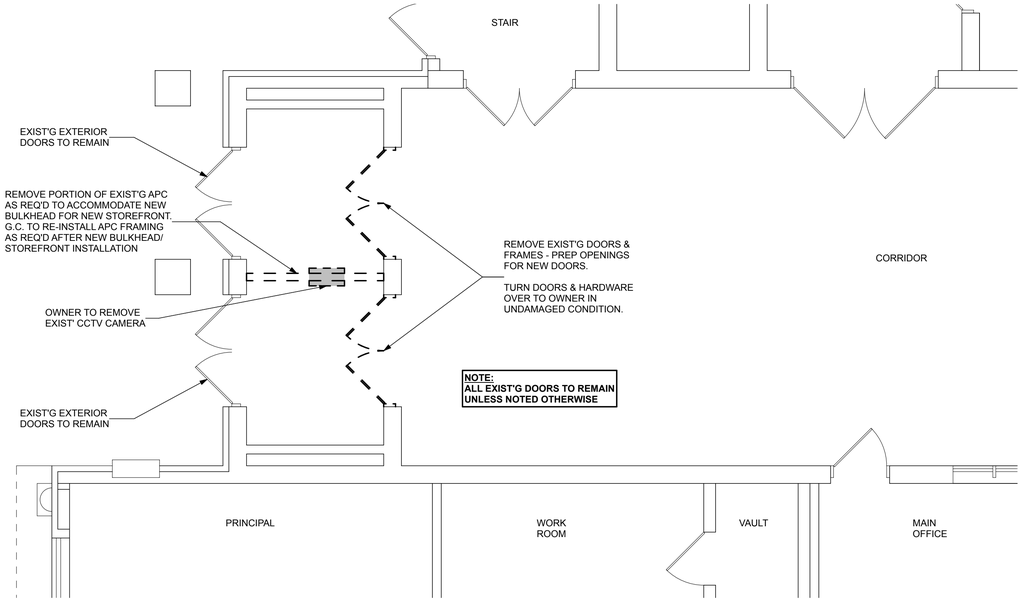
TITLE: COVER SHEET

DRAWING DATE: 26 FEB 2021
REVISION DATE:

DRAWN BY: PF
COMMISSION NO.: 5643A

HIGH SCHOOL

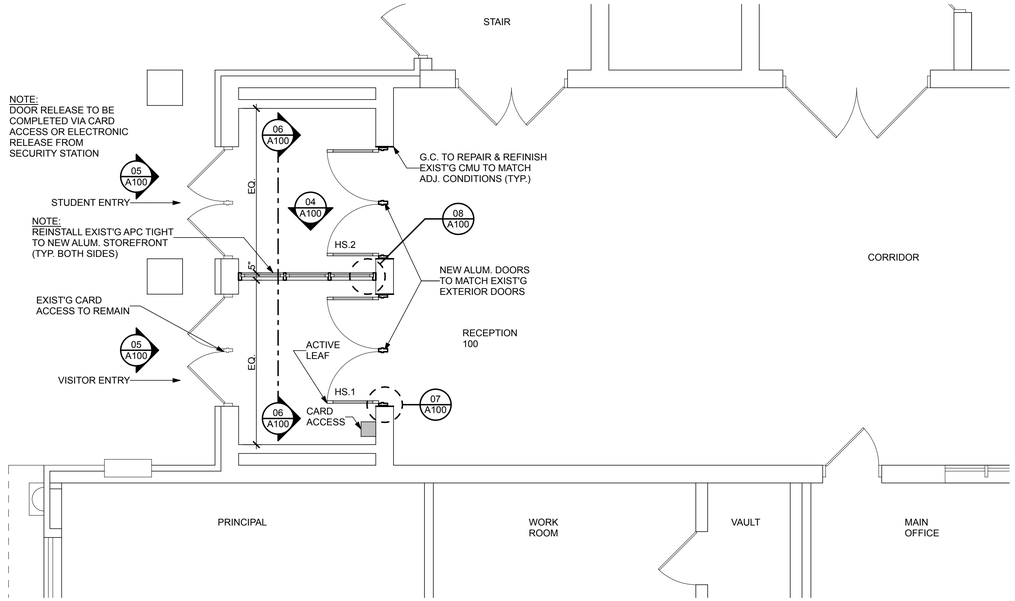
CS



HIGH SCHOOL DEMO

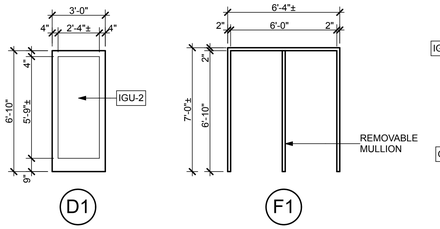
SCALE: 1/4" = 1'-0" | 01 | A100

------ EXISTING TO BE REMOVED



HIGH SCHOOL NEW WORK

SCALE: 1/4" = 1'-0" | 02 | A100



DOORS & FRAMES GENERAL NOTES:
1. DOORS & FRAMES TO BE INSTALLED INTO EXIST'G OPENINGS. G.C. TO FIELD VERIFY ALL CONDITIONS & DIMENSIONS.
2. DOOR D1 TO MATCH EXIST'G ALUM. ENTRANCE DOORS.
3. ALL DOORS & FRAMES TO BE CLEAR ANODIZED ALUMINUM.

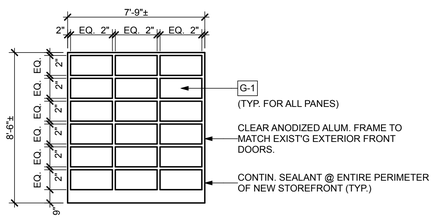
GLAZING TYPES:

IGU-2 ALUMINUM DOORS:
OVERALL UNIT THICKNESS: 1-1/16"
OUTBOARD LITE: 3/16" CLEAR TEMPERED W/ PPG "SB60" LOW E @ #2
AIR SPACE: 1/2" WARM EDGE SPACER
INBOARD LITE: 5/16" CLEAR LAMINATED GLASS WITH DUPONT SENTRYGLAS INTERLAYER
1/8" CLEAR ANNEALED
0.090" DUPONT SENTRYGLAS INTERLAYER
1/8" CLEAR ANNEALED

G-1 INTERIOR STOREFRONT VISION GLAZING:
OVERALL UNIT THICKNESS: 9/16"
GLASS SURFACE 1: 1/4" ANNEALED
INTERLAYER: 0.090" DUPONT SENTRYGLAS INTERLAYER
GLASS SURFACE 2: 1/4" CLEAR ANNEALED

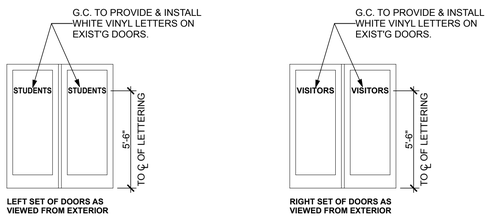
DOOR/FRAME TYPES

SCALE: 1/4" = 1'-0" | 03 | A100



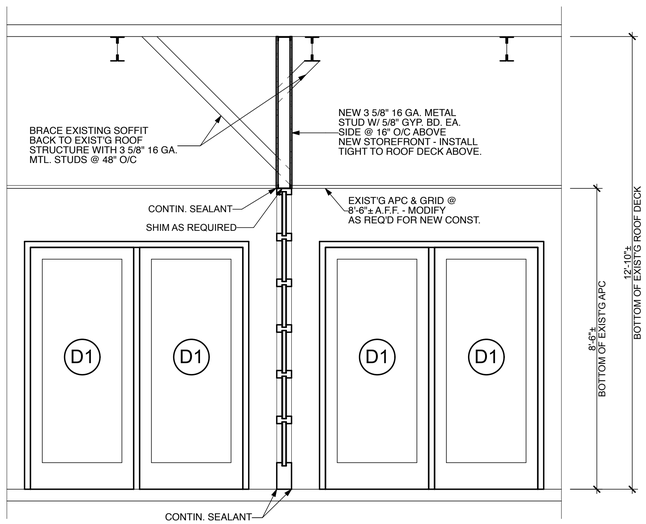
STOREFRONT ELEVATION

SCALE: 1/4" = 1'-0" | 04 | A100



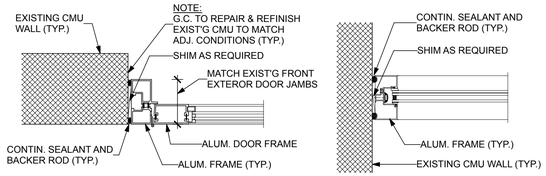
EXIST'G DOOR ELEVATION

SCALE: 1/4" = 1'-0" | 05 | A100



STOREFRONT SECTION

SCALE: 1/2" = 1'-0" | 06 | A100



07 DOOR JAMB/HEAD

08 STOREFRONT JAMB

FRAME DETAILS

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

DOOR SCHEDULE - HIGH SCHOOL

NUMBER	DOOR TYPE	DOOR WIDE	DOOR HEIGHT	DOOR THICKNESS	DOOR MATERIAL	DOOR GLAZ'G TYPE	FRAME TYPE	FRAME WIDE	FRAME HEIGHT	FRAME MATERIAL	FRAME GLAZ'G TYPE	RAT'G (MIN)	THRESHOLD	HDW SET	REMARKS
HS.1	D-1	(2) 3'-0"	6'-10"	1 3/4"	AL	IGU-2	F-1	6'-4"	7'-0"	AL	N/A	N/A	N/A	4.0	(1), (2)
HS.2	D-1	(2) 3'-0"	6'-10"	1 3/4"	AL	IGU-2	F-1	6'-4"	7'-0"	AL	N/A	N/A	N/A	3.0	(1), (2)

KEY:
AL Aluminum
IGU-2 Aluminum Door Vision Glazing
N/A Not Applicable

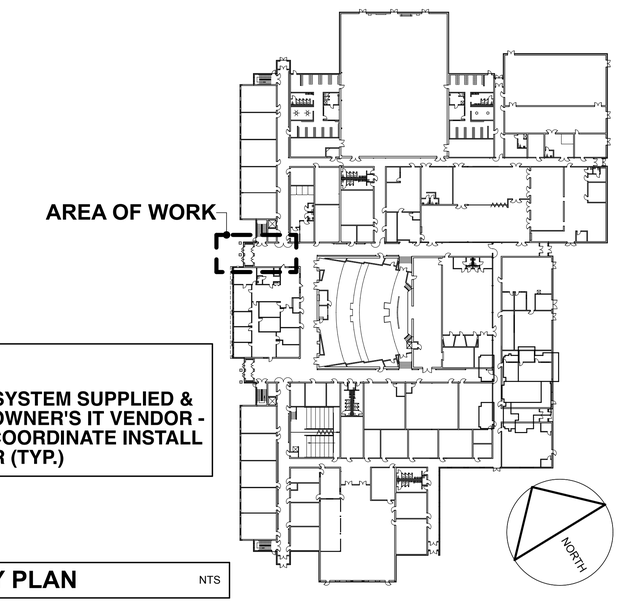
NOTES:
(1) Verify opening dimensions in field.
(2) Frame to include removable mullion.

NOTE:

CARD ACCESS SYSTEM SUPPLIED & INSTALLED BY OWNER'S IT VENDOR - G.C. TO FULLY COORDINATE INSTALL WITH IT VENDOR (TYP.)

KEY PLAN

NTS



PRINT DATE: 3/12/21

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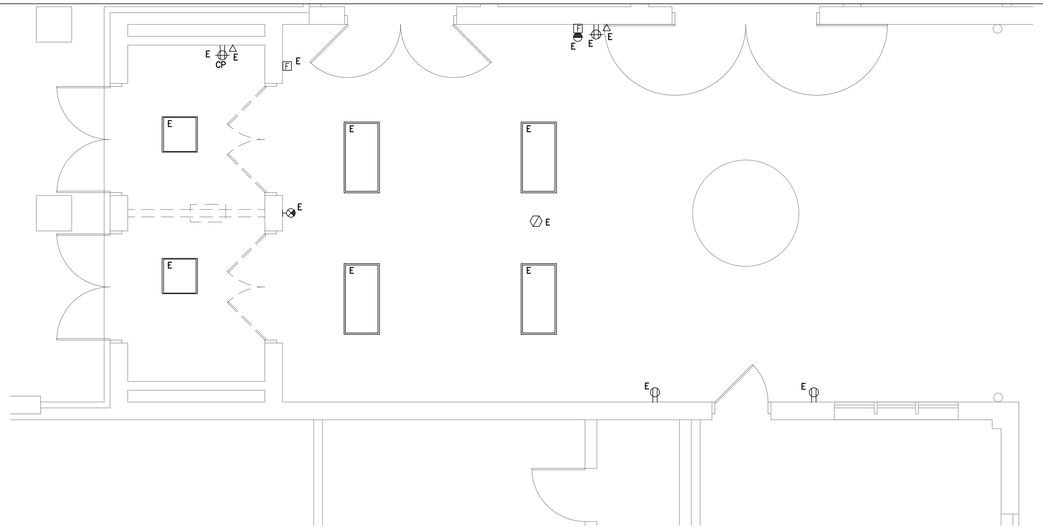
NJDOE SP #2670-005-19-1000

BUILDING ENTRANCES
SECURITY ENHANCEMENT
LINDENWOLD HIGH SCHOOL
801 EGG HARBOR ROAD
LINDENWOLD, NJ 08021

TITLE: DEMO & NEW WORK PLANS / DETAILS

DRAWING DATE: 26 FEB 2021
REVISION DATE:
DRAWN BY: PF
COMMISSION NO.: 5643A

HIGH SCHOOL
A100
2 OF 2

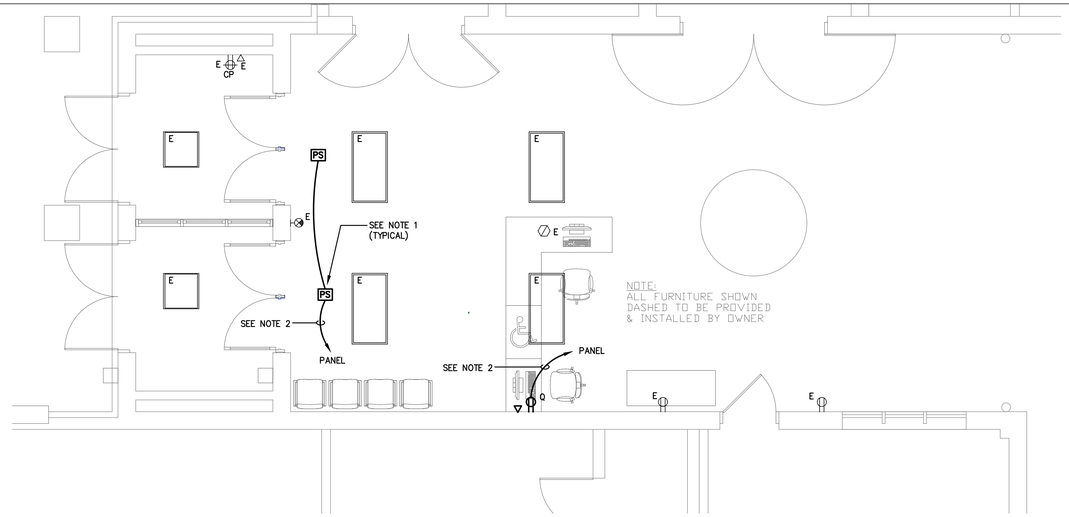


1 / E100 PARTIAL FLOOR PLAN – ELECTRICAL DEMOLITION

SCALE 1/4" = 1'-0"

NOTE:

1. EXISTING DEVICES ARE PRESENT THAT ARE BEING REMOVED/RELOCATED VIA THE OWNER, THESE ARE NOT SHOWN, REFER TO GENERAL NOTES AND ARCHITECTURAL DRAWINGS, TYPICAL.



2 / E100 PARTIAL FLOOR PLAN – ELECTRICAL

SCALE 1/4" = 1'-0"

NOTES:

1. PROVIDE CONDUIT AND PULLWIRE FROM POWER SUPPLY TO ACCESS CONTROL DEVICES, INCLUDING BUT NOT LIMITED TO CARD READER, INTERCOM, ELECTRIC STRIKE, DOOR CONTACTS AND REQUEST TO EXIT. FIELD COORDINATE WITH SCHOOL'S IT VENDOR. ACCESS CONTROL DEVICES AND WIRING WILL BE BY SCHOOL'S IT VENDOR.
2. PROVIDE AND CONNECT TO NEW 20A/1P CIRCUIT BREAKER IN NEAREST EXISTING 208/120V PANEL WITH EXISTING SPARES/SPACES CIRCUIT VIA 2 #12 & 1 #12 GRD – 3/4"C.

DEMOLITION NOTES:

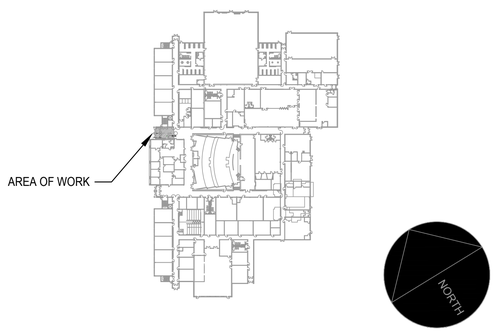
1. THESE DEMOLITION PLANS ARE INTENDED TO BE USED AS A GUIDE TO THE CONTRACTOR. ALL DEMOLITION WORK REQUIRED, OR NECESSARY FOR THE INSTALLATION OF NEW WORK OR THE REMOVAL OF EXISTING EQUIPMENT, IS HEREBY INCLUDED, WHETHER SHOWN ON THESE PLANS OR NOT. REFER TO DRAWINGS OF ALL TRADES FOR ADDITIONAL WORK, AND COORDINATE IN THE FIELD.
2. THE CONTRACTOR SHALL VERIFY ACTUAL SITE CONDITIONS PRIOR TO SUBMITTING HIS BID. THE CONTRACTOR SHALL INCLUDE ALL DEMOLITION WORK NECESSARY FOR THE EFFECTIVE INSTALLATION AND PERFORMANCE OF NEW SYSTEMS. THE CONTRACTOR SHALL ALSO INCLUDE TEMPORARY REMOVAL AND REINSTALLATION OF EXISTING WORK WHEREVER NECESSARY. THE OWNER SHALL NOT ACCEPT EXTRA COSTS ASSOCIATED WITH THE DEMOLITION AND/OR TEMPORARY REMOVAL/REINSTALLATION WORK FROM THE CONTRACTOR.
3. THIS CONTRACTOR SHALL REMOVE ALL LIGHTING FIXTURES AND ELECTRICAL DEVICES AS INDICATED ON THE DEMOLITION PLANS, OR THAT ARE NO LONGER NEEDED BY THE OWNER. ALL EXISTING WIRING AND CONDUIT WHERE NO LONGER REQUIRED SHALL BE REMOVED BACK TO EXISTING PANEL. ALL EXISTING DISCONNECTED CIRCUITS NOT BEING REUSED SHALL BE TURNED OFF AND LABELED "SPARE". WHERE CONDUITS ARE INACCESSIBLE, REMOVE WIRE AND ABANDON CONDUITS.
4. IT IS THE CONTRACTORS RESPONSIBILITY TO VERIFY POWER IS BEING PROVIDED TO ALL EXISTING EQUIPMENT REQUIRED TO REMAIN IN SERVICE. RECONNECT ALL DISTURBED FACILITIES WHICH ARE EXISTING TO REMAIN AND PLACE THEM IN OPERATIONAL CONDITION.
5. REMOVE ALL WIRING DEVICES FROM WALLS TO BE DEMOLISHED. REMOVE EXISTING LIGHT SWITCHES WHERE NO LONGER REQUIRED. REUSE ALL EXISTING CONCEALED CONDUIT AND RECESSED DEVICE BOXES WHERE POSSIBLE. ABANDON BOXES IF THEY ARE IN EXISTING WALLS TO REMAIN. PATCH WALLS OVER ABANDONED BOXES TO MATCH ADJACENT SURFACES.
6. REMOVE ABANDONED OUTLET BOXES, SURFACE METAL RACEWAY AND CONDUIT THAT WOULD BE EXPOSED, AND REPAIR DISTURBED SURFACES TO MATCH ADJACENT AREAS.
7. MAJOR PIECES OF EQUIPMENT ARE TO BE TURNED OVER TO THE OWNER FOR HIS USE, OR AT THE OWNER'S DISCRETION, REMOVED FROM THE SITE AND DISPOSED OF, IF NO LONGER REQUIRED.
8. PATCH ALL WALLS TIGHT AT REMOVALS. MAINTAIN FIRE RATINGS AS REQUIRED.
9. THE CONTRACTOR SHALL REFER TO THE ARCHITECTURAL DRAWINGS FOR THE EXTENT OF WALL FINISHES AND CEILINGS TO BE REPLACED. ALL EXISTING DEVICES TO REMAIN SHALL BE TEMPORARILY DISCONNECTED AND REINSTALLED. WHERE TEMPORARY REMOVAL IS NOT POSSIBLE THE CONTRACTOR SHALL PROVIDE TEMPORARY SUPPORT OF EXISTING EQUIPMENT IN PLACE.
10. THE EXISTING FIRE ALARM SYSTEM SHALL BE MAINTAINED THROUGHOUT DEMOLITION AND CONSTRUCTION. PROVIDE TEMPORARY SUPPORT OF EXISTING DEVICES AS REQUIRED. THE CONTRACTOR SHALL NOTIFY THE FIRE MARSHAL UPON ANY MODIFICATIONS TO OR ANY NECESSARY INTERRUPTION IN SYSTEM OPERATION. NOTE THAT COVERING DEVICES DURING CONSTRUCTION IS AN INTERRUPTION TO COVERAGE.

SYMBOL LIST & ABBREVIATIONS

	LIGHT FIXTURE
GFI	DUPLEX RECEPTACLE, 20A, 125V, 2 POLE, U-GROUND SLOT, GFI INDICATES GROUND FAULT INTERRUPTION Q INDICATES DOUBLE DUPLEX (QUAD)
	VOICE/DATA/VIDEO OUTLET – 4" X 4" OUTLET BOX WITH 1-1/4"C STUBBED UP ABOVE NEAREST ACCESSIBLE CEILING VERIFY LOCATION IN FIELD
PS	POWER SUPPLIES (FOR ACCESS CONTROL DEVICES)
	208/120V PANELBOARD
	FIRE ALARM, SMOKE DETECTOR
	WIRE & CONDUIT, CONCEALED IN CEILING OR WALL
	HOMERUN TO PANEL, NUMERAL INDICATES CIRCUIT NUMBER
	CONNECTION TO EQUIPMENT
AFF	ABOVE FINISHED FLOOR
E	EXISTING

GENERAL NOTES:

1. THE DISTRICT WILL BE RESPONSIBLE TO REMOVE AND RELOCATE ALL EXISTING FIRE ALARM DEVICES, TIME CLOCKS, PHONE LINES, BURGLAR ALARMS, SECURITY/TV, ETC.
2. THE CONTRACTOR FOR THE VESTIBULE–BID WORK WILL PROVIDE THE ELECTRIFIED DOOR HARDWARE AS PART OF THE NEW DOORS AND STOREFRONTS, HOWEVER THE DISTRICTS SECURITY VENDOR WILL BE REQUIRED TO WIRE THE HARDWARE BACK TO THEIR AIPHONE OR OTHER METHOD OF RETRACTING THE DOOR LOCKS.



KEY PLAN NTS

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Frank Tindall, P.E.
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NJDOE SP # 2670-005-19-1000

BUILDING ENTRANCES
SECURITY ENHANCEMENTS
LINDENWOLD HIGH SCHOOL
801 EGG HARBOR ROAD
LINDENWOLD, NJ 08021

TITLE: PARTIAL FLOOR PLAN, SCHEDULE & SYMBOL LIST - ELECTRICAL

DRAWING DATE: 26 FEB 2021
REVISION DATE:
DRAWN BY:
COMMISSION NO.: 5643A

HIGH SCHOOL

E100

1 OF 2

GENERAL REQUIREMENTS

This Section is coordinate with and complementary to the General Conditions and Special Requirements.

Drawings are diagrammatic. Sizes and locations of equipment are shown to scale where possible, but may be distorted for clarity on the Drawings. Final locations shall be as required or directed.

Light and power and system riser diagrams and schematic diagrams generally indicate equipment and connections to be used for various systems. System conduit and wiring shall be as required. Provide all work shown on diagrams whether or not it is duplicated on the plans.

SCOPE OF WORK

In general the work includes, but is not limited to the following:

1. Raceways and installation components.
2. Wire and Cable.
3. Panelboards (modifications)
4. Grounding.
5. Testing.
6. Seismic restraints.
7. Furnishing of access doors.
8. Furnishing and setting of all sleeves through the floors, roof, and walls where required, including waterproofing, and fireproof sealing, and cap flashing.
9. Cutting, drilling and boring associated with electrical work.
10. Prime painting, where required for electrical equipment and installation.
11. Final connection of all equipment unless otherwise noted.

QUALITY ASSURANCE AND STANDARDS

The complete installation shall be in accordance with NJUCC (The State Building Code).

Contractor to be responsible for securing all necessary permits and obtaining all necessary approvals. He shall complete all necessary forms and pay all necessary fees.

SUBMITTALS

The Contractor shall submit shop drawings for all systems and components with such promptness as to cause no delay in his own work or that of another contractor.

EXAMINATION OF EXISTING CONDITIONS ON PREMISES

Before submitting his bid, this Contractor shall visit the site of the work and shall thoroughly familiarize himself with the existing conditions affecting the work. By the act of submitting a bid, the Contractor shall be deemed to have made such an examination, to have accepted such conditions, and to have made allowance therefore in preparing his bid. No additional compensation will be granted on account of extra work made necessary by the Contractor's failure to investigate such existing conditions. Verify all grades, elevations, dimensions, and clearances at the site.f

COORDINATION OF WORK WITH OTHER TRADES

The contractor shall coordinate the work of this Section with the work of all other Contracts and all the Utility Companies. It shall be so arranged that there will be no delay in the proper installation and completion of all work.

INSPECTION AND TESTS

The entire wiring system must test free from short and open circuits. Every ground shall be tested for compliance with standards listed below.

PROTECTION, MAINTENANCE AND PRODUCT HANDLING OF ELECTRICAL EQUIPMENT

Electrical equipment shall be delivered and stored at the site, properly packed and crated until finally installed.

Provide effective protection against damage for all material and equipment during shipment and storage at the Project Site.

This Contractor shall be responsible for the maintenance of all installed equipment and systems until final acceptance by the Owner.

GUARANTEE

This Contractor shall guarantee in writing to the Owner that all work installed by him shall be free of defects in workmanship and materials and that all apparatus will develop the capacities and characteristics as indicated, and that, if during a period of two years from date of final approval of work by the Architect, any defects in workmanship, materials or performance appear, he will remedy them without any cost to the Owner.

ACCESSIBILITY AND MEASUREMENTS

All work shall be installed so as to be readily accessible for operation, maintenance, and repair. Minor deviations from the plans may be made to accomplish this, subject to approval.

Before ordering any material or doing any work, the Contractor shall verify all measurements at the Building, and shall be responsible for the correctness of same as related to the work under this Contract.

IDENTIFICATION NAMEPLATES

Identify and mark all electrical equipment to meet OSHA standards and as specified herein.

Unless otherwise noted, nameplates shall be black laminate with white letters of uniform size consisting of reasonably large capital letters, 3/16 inch minimum.

SEISMIC RESTRAINTS

Provide lateral restraints for all electrical equipment installed on project; i.e., Battery racks, ballast racks, cable trays, conduit, generators, lighting fixtures, panels and transformers. Typically, lateral restraints shall consist of angle iron and "uni-strut" bracing, cross bracing, hanger rods, anchor clips, expansion shield anchor bolts, etc. The purpose of the restraints is to provide resistance to lateral (horizontal) movement during earthquake.

All equipment shall be anchored to the floor, ceiling structure or walls.

All suspended equipment, wiring trough and conduit trade size 2-1/2" or larger shall have (lateral) horizontal bracing capable of resisting 50% of the equipment weight. Horizontal bracing shall be placed at each point where vertical supports are specified or required.

All life safety equipment, and conduit shall have lateral bracing capable of resisting 100% of the equipment weight.

Stem mounted fixtures shall have stems and swivel canopies designed for seismic loads. Ceiling outlet boxes and hangers for stem-mounted fixtures shall have lateral bracing capable of withstanding full vertical load. Lateral bracing shall be attached to the ceiling (at an angle) or wall structure.

Recessed and surface mounted light fixtures must be secured to the ceiling system so as to resist 50 % of their weight laterally; i.e. a 40 pound fixture must be resistant to a 20 pound lateral force. Life safety lighting fixture must be secured to the ceiling system so as to re-sit 100% of their weight laterally. Suitable anchor clips must be provided for all lay-in fixtures. Surface mounted fixtures must be supported at two points in addition to the outlet box.

RACEWAYS AND INSTALLATION COMPONENTS

The requirements of this Section apply to raceway work specified elsewhere in these specifications.

The work includes the providing of completely coordinated grounded raceway systems complete with boxes, fittings, flexible connections to vibrating equipment and accessories, as specified and as required for a complete system.

The work permits the use of metal-clad cable in conjunction with conduit. See below.

Raceways and fittings shall be manufactured by Triangle or approved equal by Allied or Republic.

Rigid steel conduit shall be full weight steel pipe, hot dip galvanized inside and outside, threaded, minimum 3/4 inch.

Intermediate metal conduit (IMC) shall be intermediate steel pipe, hot dip galvanized, threaded, minimum 3/4 inch.

Electric metallic tubing (EMT) shall be steel thin wall pipe, galvanized, threadless, minimum 3/4 inch, maximum 2 inch.

Flexible steel conduit (Greenfield) shall be continuous single strip, galvanized, minimum 3/4 inch.

Liquid-tight flexible steel conduit (Seal-tite) shall be zinc coated, consist of flexible galvanized steel tubing over which is extruded a liquid-tight sheathing of polyvinyl chloride (PVC). Conduit shall be provided with a continuous copper bonding conductor would spirally between the convolutions.

Rigid steel and IMC conduit fittings shall be standard threaded couplings, locknuts, bushings, and elbows. Material shall be steel or malleable iron only.

Electrical metallic tubing fittings shall be compression waterproof connection type. Set screw or indent type connectors are not permitted.

Flexible steel conduit (Greenfield) fittings shall be multiple point type, threading into the internal wall of the conduit convolutions, and shall have insulated throat.

Liquid-tight flexible metal conduit fittings shall incorporate a threaded grounding cone, a steel or plastic compression ring, and a gland for tightening. Connectors shall have insulated throats.

Expansion and deflection couplings shall be manufactured by O-Z/Gedney, Crouse-Hinds, Appleton or approved equal.

Individual conduit hangers, shall be designed for the purpose, and have pre-assembled closure bolt and nut, and provisions for receiving hanger rod.

Multiple conduit (trapeze) hangers shall be not less than 1-1/2 by 1-1/2 inch, 12 gauge steel, cold formed, lipped channels. Hanger rods shall be not less than 3/8-inch diameter steel.

Solid masonry and concrete anchors shall be a type approved for the purpose.

Provide and assume responsibility for locating and maintaining in proper position all sleeves required for the work.

Openings through floors and walls in which cables, conduits, or pipe pass shall be sealed by U.L. classified smoke and fire stop fittings, and have an hourly rating equal to the fire rating of the floor or wall. Fittings shall be similar to O-Z/Gedney Type "CFS" or "CAFS".

Penetrations through fire-rated floors in which wiring for floor service outlets are routed shall be sealed by U.L. classified smoke and fire-stop fittings, and shall have an hourly rating equal to the floor rating. Fittings shall be similar to O-Z/Gedney Type "PTFS".

Outlet boxes shall be manufactured by Raco, RussellStoll, Steel City, Thomas & Betts or Crouse Hinds.

Outlet boxes for concealed work shall be galvanized steel, 4 in. square or octagon (except as otherwise required by construction, devices or wiring). Provide sufficient depth for application.

Outlet boxes located outdoors and in damp locations shall be weatherproof.

Offset back-to-back outlets shall have minimum 6 in. separation between them. In rated walls, they are to be separated by a stud

Junction, splice and pull boxes shall be made of code gauge sheet steel with removable covers fastened with brass or stainless steel screws, except as noted, and will include insulated supports for cables. Box dimensions shall conform to N.E.C. requirements.

Provide junction, splice and/or pull boxes as noted or as required to facilitate pulling of conductors or in raceway runs that have more than three (3) 90-degree bends.

For indoor applications, boxes shall have a gray enamel finish. For outdoor and damp locations, boxes shall be galvanized.

Wireways shall be as manufactured by Square D, General Electric, or approved equal.

Wireways shall be square, brake-formed of code gauge steel, furnished in standard 10-foot sections with knockouts as required. Wireways shall be of the screw cover type and all necessary offset and elbow fittings. They shall have a gray enamel finish. Size shall be as required for proper cable fill.

Install raceway and installation components as indicated, in accordance with manufacturer's written instructions, applicable requirements of NEC and in accordance with the recognized industry practices, to ensure that products serve intended function.

Raceway supports shall be provided by means of ceiling trapeze, strap hangers, or wall brackets. Use structural steel angles or channels, or manufactured steel support system. Spacing of supports shall be as per NEC and per manufacturer's recommendations but in no case shall exceed 8'-0" on centers. Provide U-bolts at each floor level for riser raceways and anchor to acceptable supports. Secure raceways to supports with pipe straps or U-bolts.

Mechanically join all metal raceways, enclosures and junction boxes to assure continuity.

Branch circuit conduits shall be supported by the building structure.

Conduits located underground beyond the building for branch wiring shall be installed with a minimum of 30 in. top cover as shown on the drawings.

Provide expansion-deflection fittings at expansion joints in accordance with manufacturer's recommendations. Expansion-deflection fittings shall be used for all trade sizes 1-1/4" or larger. For trade sizes up to 1" in size, a suitable length of flexible conduit (or liquid-tight flexible conduit) with sufficient slack for movement and grounding conductor fastened on each side of joint shall be permitted.

Rigid steel conduit shall be used for underground installation; in wet, damp or wash down locations; for exposed runs on the exterior of the building; embedded in concrete or masonry or below concrete that is in contact with earth.

Intermediate metal conduit (IMC) may be used in place of rigid steel in dry locations only.

EMT is to be used for feeders and branch circuits in dry locations such as hung ceilings, interior hollow block walls and furred spaces.

Flexible steel conduit shall be used in dry locations for short connections where rigid conduits or tubing is impracticable, and for final connections to lights and equipment other than motors and transformers.

Liquid-tight flexible steel conduit shall be used in damp locations for final connections to motor terminal boxes, transformers, and other vibrating equipment in damp and dry locations.

In general, cutting and core drilling is to be avoided. Where it becomes necessary, locations are to be coordinated with other trades, the Owner and the structural engineer. There is to be no cutting or core drilling without prior approval.

Provide an outlet box for each lighting fixture and device shown, or required, in the wiring system.

Provide galvanized steel extension rings (depth as required) and raised cover plates in plaster, dry wall, masonry and tile walls.

Mount outlet boxes for similar equipment at uniform height within same or similar areas.

Outlet boxes for fixtures recessed in non-accessible ceilings shall be accessible through the opening created by the removal of the fixture or through access doors provided by this contractor.

All outlet boxes in finished areas for convenience receptacles or local switches shall be 4" square and 1-5/8" deep minimum. Provide with regular deep switch extension cover.

Boxes for use with surface mounted raceways shall be of the same construction and manufacture as the raceway.

Provide junction, splice and pull boxes where required to facilitate installation of wiring, whether or not shown on Drawings. Size boxes according to code, and provide interior partitions, insulated supports, hot dip galvanized angle iron braces, screw-on one-piece or split covers, ground connectors, and other accessories as required.

All outdoor installations shall be weatherproof.

Support all material from the building structure in an approved manner.

Where electrical equipment is mounted in suspended ceiling panels, provide support members to span between runners of ceiling suspension system. Do not support electrical equipment from acoustical panels or other ceiling material; attach to this material for alignment only.

Where electrical outlet boxes, lighting fixtures, and other equipment is installed on tee bars of suspended ceilings, use independent support clips with threaded studs. Do not attach to tee bar except for alignment; use clip similar to Caddy "IDS" that snaps around tee bar and has provisions for independent support wire. Attach a suitable anchor in the structure above ceiling, and suspend a minimum No. 12 support wire to engage the clip.

Do not exceed manufacturer' load rating for mounting devices.

At drywall partitions, provide support members to carry weight of equipment; do not use drywall material to carry any weight.

WIRE AND CABLE

The work includes providing wire and cable complete with all accessories in accordance with Drawings and Specifications and as required for a complete system. Wiring size referenced in this Section shall be AWG, except as noted

This project has been designed for copper conductors. Aluminum conductors are not acceptable and shall not be used. Cable shall be manufactured by Triangle or approved equal by Carol or Guardian Products.

No. 10 and smaller conductors shall be ASTM Standard, solid, copper; and, No. 8 and larger conductors shall be ASTM standard, stranded copper.

Minimum conductor size shall be No. 12 for lighting and power and No. 14 for control and alarm. Increase wire sizes as required for long runs to overcome voltage drop.

Communications and signal wiring shall conform to the recommendations of the manufacturer's communication and signal systems and shall be specified in respective Sections of these Specifications.

"THWN" or "XHHW" insulation shall be used for interior branch circuit and feeder wiring. Rating shall be 90°C in dry locations and 75°C in wet locations.

Green colored insulated wire shall be used for all grounding applications.

Phase wires shall be color-coded as follows:

1. 120/208 volt system: Black for A phase
   Red for B Phase
   Blue for C Phase

Neutral conductors shall be white for 120/208 volts.

Provide O-Z/Gedney Type "CSB" series or approved equal seal fittings between the wire and conduit for all cable and wire entering the building from underground, including service cables.

Not more than 3 current carrying conductors shall be in one (1) conduit unless otherwise indicated. Provide one neutral conductor for each 3 phase 4 wire homerun to a panelboard unless otherwise noted.

MC cable shall comply with the NEC article 330. MC cable shall be as manufactured by AFC or approved equal by Guardian Products.

MC cable shall include a green insulated ground wire of the same size as the other conductors.

Run MC cable in dry hollow metal partitions and above suspended ceilings. Install cable as slack span; do not pull tight. Maintain at least 6" clearance between parallel runs of light and power wiring to avoid inductive coupling. Maintain at least 24" clearance from hot water and steam piping. Provide conduit sleeves through walls and partitions that abstruct horizontal passage of wiring, and seal sleeves after installation of cables. Cable shall be secured by approved staples, hangers or similar fittings independent of ceiling grids or supports.

MC cable shall be used in conjunction with conduit. Cable shall only be permitted for single phase circuits in hollow metal walls and above accessible ceilings. Single phase cable runs shall be gathered into three phase conduit homeruns. In no case shall cable enter directly into panelboards.

Secure MC cable to ceiling structure at intervals not to exceed 6 feet and within 12 inches of every outlet box, junction box, or fitting.

Make wire splices electrically and mechanically secure. Install small wire connectors so that no bare conductor is exposed. Tighten bolts on large conductor connectors so that conductor is deformed, but do not break strands of wire. Use compression tool with proper die for compression connectors in accordance with manufacturer's recommendations, so that conductors are deformed but not broken. Apply insulation over splice so that insulation thickness is at least 1-1/2 times that on conductor. Lap applied insulation at least 1" over conductor insulation so that no bare conductor is exposed.

In general, all feeders No. 8 and larger shall be continuous from point of origin to equipment being served. Splices shall only be used where necessary and with prior written approval of the Engineer.

Terminate conductors on terminal strips in equipment where terminal strips are used. Provide appropriate connectors, or hook conductors around terminal screws as required.

Provide encapsulated splice kits (3-M type 85 series or approved equal) for all splices in areas subject to moisture, including wet locations inside buildings and underground handholes, manholes, and buried junction boxes. Install splice kit in accordance with manufacturer's recommendations, and make splice waterproof. Apply sealing putty to surround each cable. Install mold body so that resin covers each cable sheath by a minimum of one inch.

All copper conductors No. 8 & larger shall be terminated, spliced, and tapped with color-keyed compression connectors, as manufactured by Thomas & Betts Co., Series 54000, Ideal Industries Series 87000, or approved equal. The manufacturer's recommended tooling shall be used. Mechanical type connectors shall not be used.

All copper conductors No. 10 AWG & smaller shall be terminated and spliced with Ideal Industries wing-nut wire connectors or approved equal compression connectors. The flame-retardant thermoplastic insulated type shall be used to isolate the terminal from other metal parts and equipment.t

Use insulating boots supplied for compression connectors or fill joint with "Scotchfill" insulating putty and serve (3) 1/2 lap layers of "Scotch" #33 electrical tape.

WIRING DEVICES AND INSTALLATION COMPONENTS

All local switches near doors shall be located at strike side of door as finally hung, whether so indicated on the Drawings or not.

Height of outlets from finished floor to centerline of outlet shall be as follows:

Receptacle outlets: 1'-6", unless otherwise noted

Wall switch outlet: 3'-8"

Wall switch outlet at borrowed light: 3'-0"

* The top of the wall device is to be even with the top of the door frame (±7'-0) rough-in outlet box accordingly.

Wiring devices and installation components shall be manufactured by Hubbell, Bryant Electric, Pass & Seymour, Leviton, Cooper Industries-Arrow Hart, or General Electric.

Switches shall be heavy-duty specification grade, toggle, quiet type, fully enclosed in composition cases, color as selected by Architect at shop drawing stage. They shall be rated 20 amp, 120/277 volt, AC.

Receptacles shall be the grounding type, composition base, meeting NEMA standards, publication WD-1-1971, color as selected by Owner.

Duplex Convenience Receptacles shall be 20 amps, 125 volts, 2 pole, 3 wire, U ground slot type, Hubbell No. BR20.

Special purpose Single Receptacles shall be 20 amps, 125 volts, 2 pole, 3 wire, twist-lock type, Hubbell No. 2310.

Ground Fault Interrupter Duplex Receptacles: 20 amps, 125 volts, 2 pole, 3 wire, Hubbell No. GF-5352, with weatherproof cover, Hubbell No. 5221.

Where more than one switch or receptacle is being installed, provide multiple gang plates for number of devices as required.

Plates shall be beveled stainless steel satin chrome finish #302, of minimum .035" thickness.

Manual motor starters shall be Allen Bradley Bulletin 600 or approved equal by Square D or General Electric and shall be horsepower rated, and voltage rated for the motor load.

Wallboard and masonry shall fit snuggly to all sides of outlet boxes, grout and patch as required.

Convenience receptacles shall be mounted with ground pole up, except those mounted above counter levels.

Local wall switches and receptacles shall be mounted vertically unless otherwise indicated.

PANELBOARDS

Panel circuit breaker overcurrent protective devices shall be as scheduled on the Drawings and as specified. All breakers shall be bolted-on thermal magnetic type

Panel circuit breakers shall be rated for 10,000 RMS symmetrical amperes minimum interrupting rating at 120/208 volts. Provide higher ratings as required or as scheduled on the Drawings.

Provide handle-locking attachments for all circuit breakers serving emergency lights, exit lights, clocks, and other functions indicated.

Furnish and install a typewritten circuit directory. Hand written will not be accepted.

KELTER & GILLIGO
consulting engineers
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PRINCETON JUNCTION NEW JERSEY 08550

Frank Tindall, P.E.
Professional Engineer
NJ 38656

PRINT DATE: 1/8/21

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NJDOE SP # 2670-005-19-1000

BUILDING ENTRANCES
SECURITY ENHANCEMENTS
LINDENWOLD HIGH SCHOOL
801 EGG HARBOR ROAD
LINDENWOLD, NJ 08021

TITLE: SPECIFICATIONS & SCHEDULE - ELECTRICAL

DRAWING DATE: 26 FEB 2021
REVISION DATE:
DRAWN BY: LA
COMMISSION NO.: 5643A

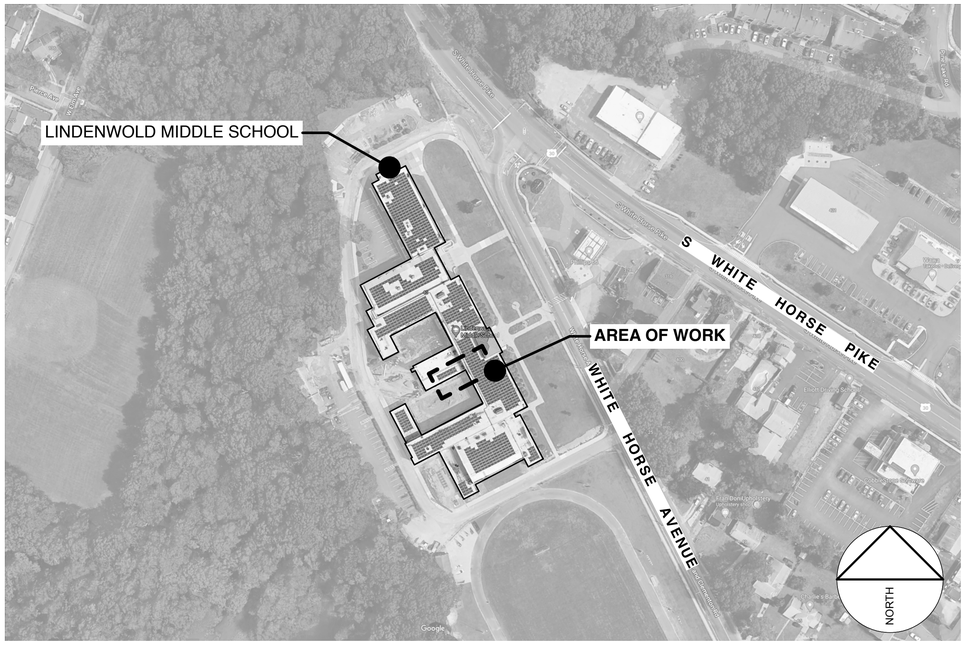
HIGH SCHOOL

E200

2 OF 2

BUILDING ENTRANCES SECURITY ENHANCEMENT
LINDENWOLD MIDDLE SCHOOL

BLOCK 145, LOT 2
40 WHITE HORSE AVENUE
LINDENWOLD, NJ 08021
NJDOE STATE PROJECT #2670-090-19-1000



LIST OF DRAWINGS:

All Contractors shall examine all drawings indicated herein for required coordination between different trades and/or for work included in other sections of the Project Manual that may pertain to their respective contract.

CS	COVER SHEET
A100	DEMO & NEW WORK PLANS / DETAILS
A101	DETAILS & INTERIOR ELEVATIONS
A102	CANOPY DETAILS & SIGNAGE
E100	PARTIAL FLOOR PLAN, SCHEDULE & SYMBOLS LIST - ELECTRICAL
E200	SPECIFICATIONS - ELECTRICAL

SUBCODES

THE FOLLOWING SUBCODES AS ADOPTED BY THE NEW JERSEY UNIFORM CONSTRUCTION CODE (NJAC 5:23 et seq.) SHALL APPLY TO THIS PROJECT.

SUBCODE	NATIONAL MODEL CODE	UCC REFERENCE
BUILDING	INTERNATIONAL BUILDING CODE NJ ED/2018	NJAC 5:23-3.14
PLUMBING	NATIONAL PLUMBING CODE /2018	NJAC 5:23-3.15
ELECTRICAL	NATIONAL ELECTRICAL CODE /2017	NJAC 5:23-3.16
ENERGY	ASHRAE 90.1-2016	NJAC 5:23-3.18
MECHANICAL	INTERNATIONAL MECHANICAL CODE /2018	NJAC 5:23-3.20
FUEL GAS	INTERNATIONAL FUEL GAS CODE /2018	NJAC 5:23-3.22
REHABILITATION	REHABILITATION SUBCODE RENOVATION 6.5 AND ALTERATION 6.6	NJAC 5:23-6
BARRIER FREE	ICC/ANSI A117.1-2009	NJAC 5:23-7

EXIST'G CONSTRUCTION TYPE: IIB
USE GROUP: E

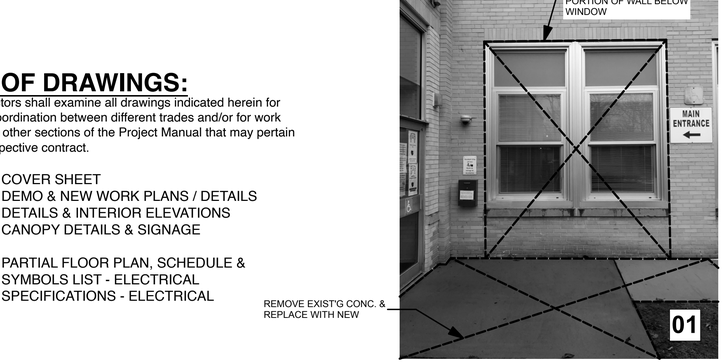
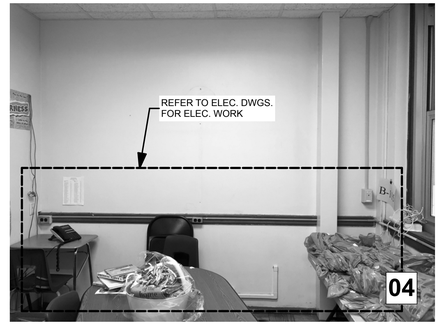
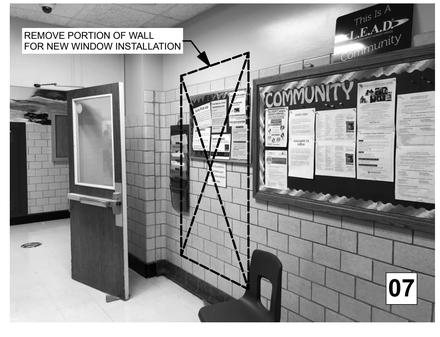


PHOTO LOCATOR PLAN NO SCALE





EXIST'G CONDITIONS PHOTOS

GENERAL NOTE:

FOLLOW APPENDIX DOCUMENTS FOR ASBESTOS ABATEMENT REQUIREMENTS

OWNER:
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801 EGG HARBOR ROAD
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MPE ENGINEER:
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NJDOE SP #2670-090-19-1000

BUILDING ENTRANCES
SECURITY ENHANCEMENT
LINDENWOLD MIDDLE SCHOOL
40 WHITE HORSE AVENUE
LINDENWOLD, NJ 08021

TITLE: COVER SHEET

DRAWING DATE: 26 FEB 2021
REVISION DATE:
DRAWN BY: PF
COMMISSION NO.: 5643A

MIDDLE SCHOOL

CS

1 OF 4

ROOM FINISH SCHEDULE - LINDENWOLD MIDDLE SCHOOL

RM #	ROOM NAME	FLR	BASE	WALLS				CLG	CLG. HT.	REMARKS
				NORTH	EAST	SOUTH	WEST			
100	RECEPTION	RTT	RUB	PTD	PTD	PTD	PTD	ETR	ETR	
101	ATTENDANCE/SRO	LVCT	RUB	PTD	PTD	PTD	PTD	ETR	ETR	

FINISH SCHEDULE KEY

APC-# Acoustical Panel Ceiling. Refer to Section 09511 - Acoustical Panel Ceilings for panel types.
PTD Paint
RTT Resilient Terrazzo Tile
LVCT Vinyl Composite Tile

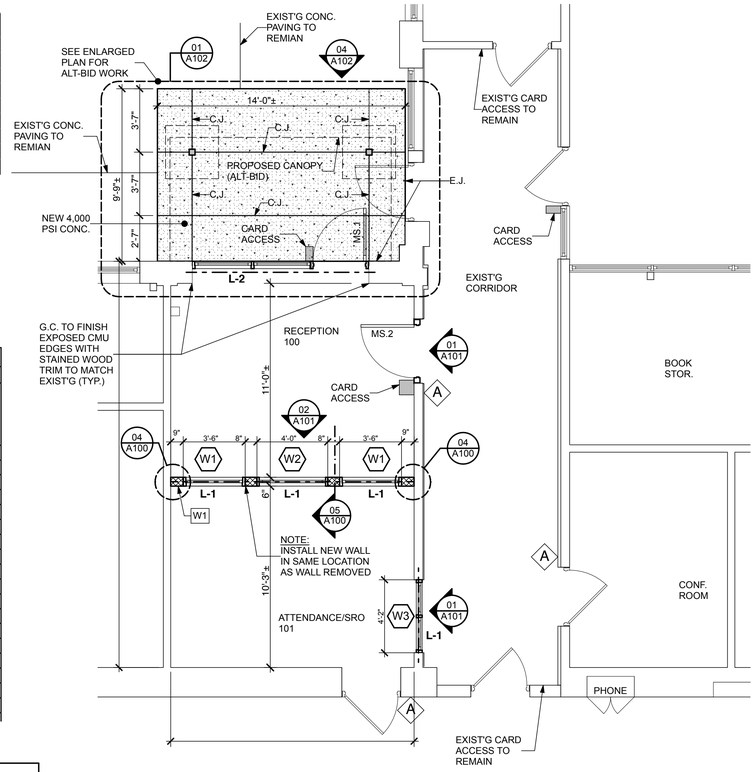
DOOR SCHEDULE - MIDDLE SCHOOL

NUMBER	DOOR TYPE	DOOR WIDE	DOOR HEIGHT	DOOR THICKNESS	DOOR MATERIAL	DOOR GLAZ'G TYPE	FRAME TYPE	FRAME WIDE	FRAME HEIGHT	FRAME MATERIAL	FRAME GLAZ'G TYPE	RATG (MIN)	THRESHOLD	HDW SET	REMARKS
MS.1	D-1	3'-0"	7'-0"	1 3/4"	AL	IGU-2	F-2	10'-0"	8'-4"	AL	IGU-1	N/A	X	2.0	(1)
MS.2	D-2	3'-4"	7'-0"	1 3/4"	WD	G-2	F-1	3'-8"	7'-2"	PHM	N/A	20	X	6.0	(1)

KEY:

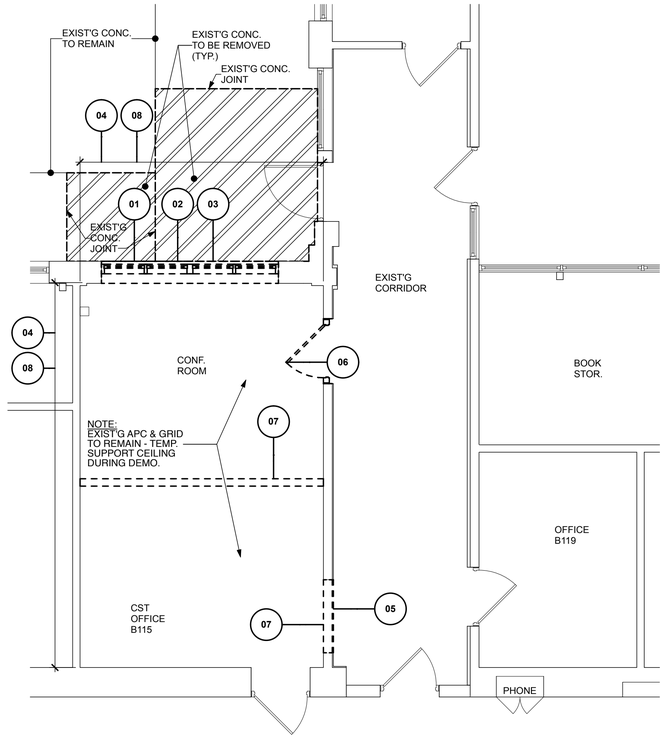
AL Aluminum
WD Wood
PHM Painted Hollow Metal
G-1 Door Vision Glazing
G-2 Fire Rated Safety Glass (No wire glass permitted)
IGU-1 Exterior Storefront Vision Glazing
IGU-2 Aluminum Door Vision Glazing
N/A Not Applicable

NOTES:
(1) Verify opening dimensions in field.



MIDDLE SCHOOL NEW WORK

SCALE: 1/4" = 1'-0" | 02 | A100



MIDDLE SCHOOL DEMO

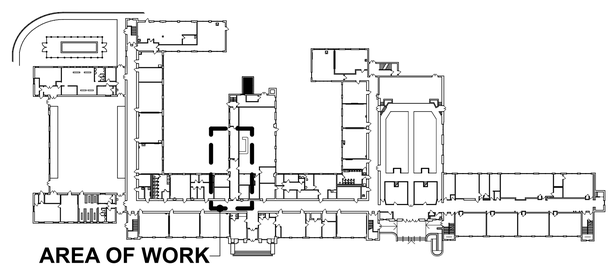
SCALE: 1/4" = 1'-0" | 01 | A100

DEMO NOTES:

- - - - - - - - EXISTING TO BE REMOVED

01 REMOVE EXIST'G ALUM. WINDOW SYSTEM IN ITS ENTIRETY & PREP OPENING FOR NEW ALUM. DOOR & STOREFRONT.
02 REMOVE EXIST'G STONE WINDOW SILL.
03 REMOVE PORTION OF EXIST'G MASONRY WALL BELOW WINDOW TO BE REMOVED TO ACCOMMODATE NEW STOREFRONT.
04 REMOVE ALL SCREWS & NAILS IN WALL. PATCH WALL & PREP FOR PAINTING. (TYP. ENTIRE ROOM)
05 CAREFULLY REMOVE EXIST'G CERAMIC WALL TILE TO PREVENT DAMAGE, WHERE REQUIRED. RETURN REMOVED, UNDAMAGED TILE TO OWNER.
06 REMOVE EXIST'G DOOR & FRAME
07 REMOVE EXIST'G WALL - INSTALL NEW LINTEL
* 08 REMOVE EXIST'G WOOD PARQUET FLOORING & MASTIC DOWN TO CONC. SLAB. *NOTE: ASBESTOS ABATEMENT REQUIRED - FOLLOW APPENDIX. PREP EXIST'G CONC. SLAB TO RECEIVE NEW FLOORING. INSTALL GYPSUM CEMENT UNDERLAYMENT THROUGHOUT TO LEVEL SLAB & BRING FLOORING TO MATCH ADJ. F.F. LEVELS.

NOTE: FOLLOW MPE DWGS. FOR ADDITIONAL REQUIREMENTS

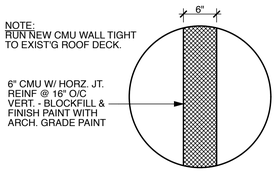


KEY PLAN

NTS

NOTE:

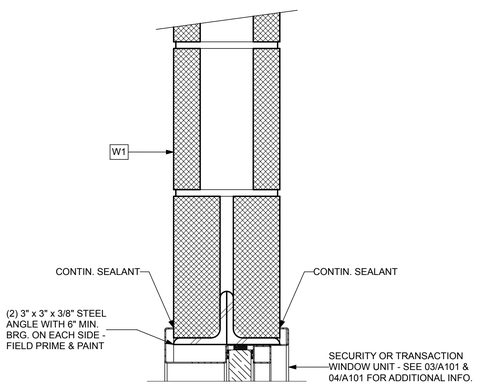
CARD ACCESS SYSTEM SUPPLIED & INSTALLED BY OWNER'S IT VENDOR - G.C. TO FULLY COORDINATE INSTALL WITH IT VENDOR (TYP.)



WALL TYPE W1

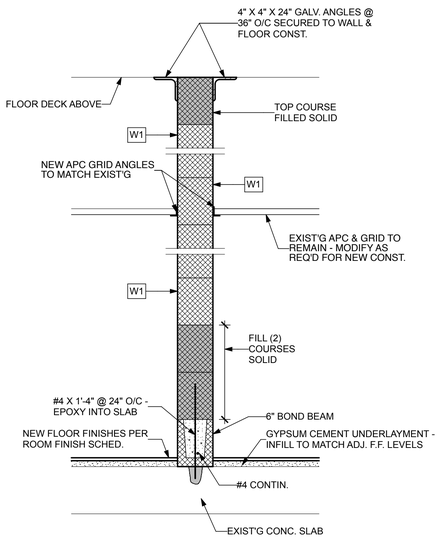
WALL TYPES

SCALE: 1" = 1'-0" | 07 | A100



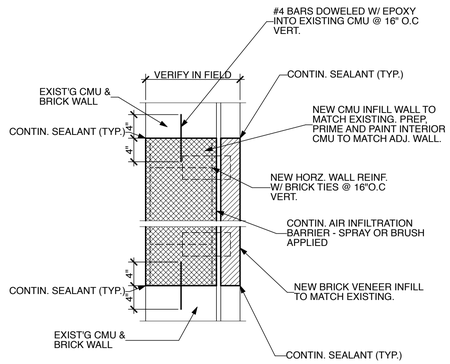
LINTEL L-1 DETAIL

SCALE: 1/2" = 1'-0" | 06 | A100



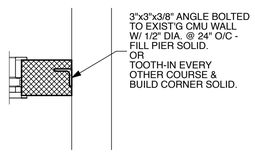
WALL SECTION

SCALE: 1" = 1'-0" | 05 | A100



PLAN DETAIL

SCALE: 1" = 1'-0" | 03 | A100



WALL SECTION

SCALE: 1" = 1'-0" | 04 | A100

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PRINT DATE: 3/12/21

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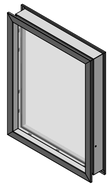
NJDOE SP #2670-090-19-1000

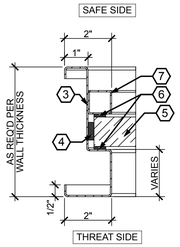
BUILDING ENTRANCES
SECURITY ENHANCEMENT
LINDENWOLD MIDDLE SCHOOL
40 WHITE HORSE AVENUE
LINDENWOLD, NJ 08021

TITLE: DEMO & NEW WORK PLANS / DETAILS

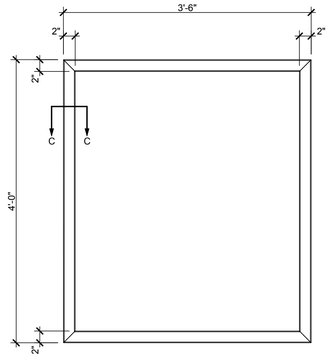
DRAWING DATE: 26 FEB 2021
REVISION DATE:
DRAWN BY: PF
COMMISSION NO.: 5643A

MIDDLE SCHOOL
A100
2 OF 4





SECTION C-C

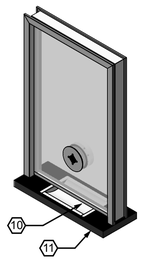


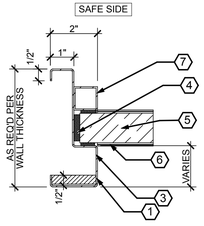
ELEVATION VIEW

SECURITY WINDOW DETAILS

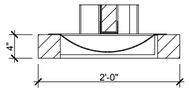
SCALE: NTS | 04 | A101

WINDOW TYPE W1





SECTION A-A



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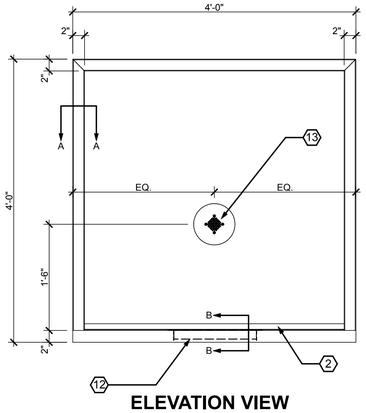


ELEVATION VIEW

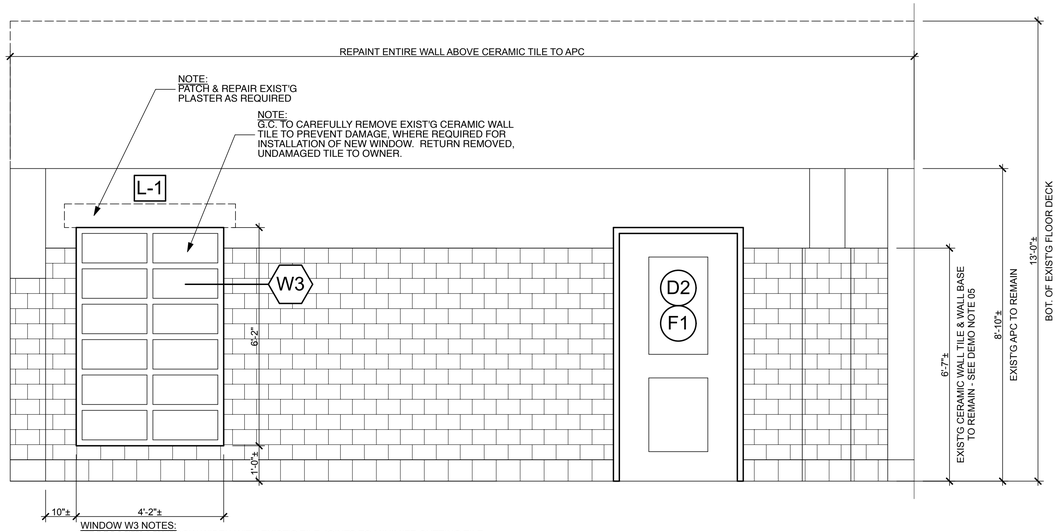
TRANSACTION WINDOW DETAILS

SCALE: NTS | 03 | A101

WINDOW TYPE W2

NOTES:

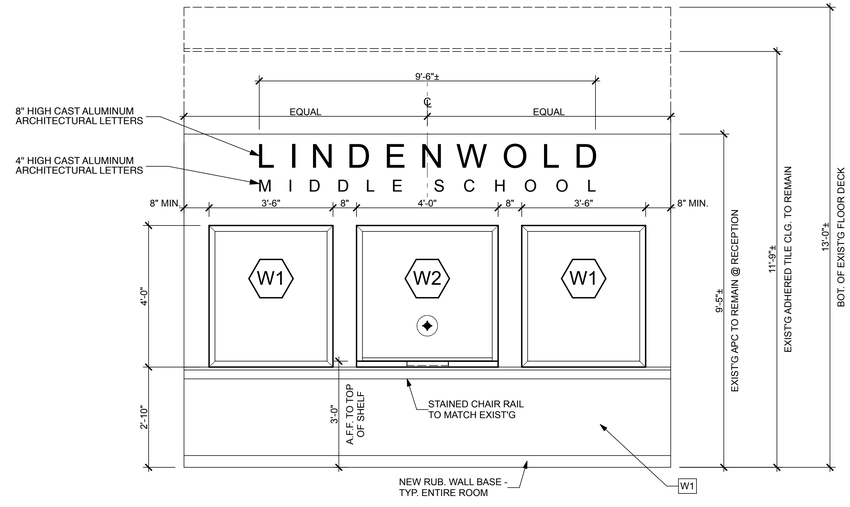
1. BULLET RESISTANT ARMOR
2. STAINLESS STEEL GLAZING CAPS
3. 16 GA. FIELD-PRIMED & PAINTED STEEL FRAME
4. NEOPRENE SETTING BLOCKS
5. BULLET RESISTANT GLAZING
6. GLAZING TAPE
7. REMOVABLE STOP 1" X 1"
8. ANCHOR HOLES AS REQUIRED PER MANUF. (NOT SHOWN)
9. ANCHORS AS REQUIRED PER MANUF. (NOT SHOWN)
10. STAINLESS STEEL DEAL TRAY
11. STAINLESS STEEL SHELF
12. STAINLESS STEEL CAP
13. SPEAKER



WINDOW W3 NOTES:
1. COORDINATE WINDOW WIDTH WITH EXIST'G TILE JOINTS TO MINIMIZE CUTTING TILE
2. ALIGN SILL WITH EXIST'G TILE JOINT.
3. ALIGN HEAD WITH DOOR MS.2 DOOR FRAME HEAD HEIGHT.

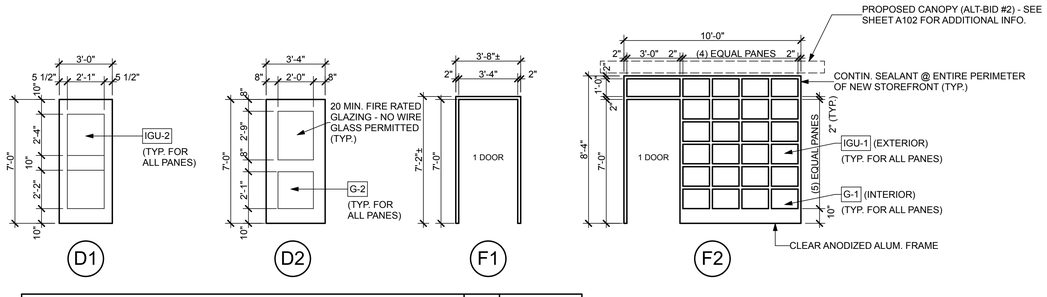
INTERIOR ELEVATION

SCALE: 1/2" = 1'-0" | 01 | A101



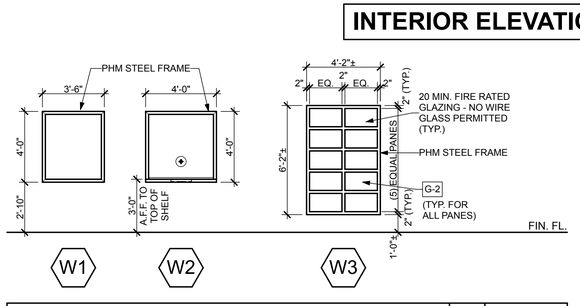
INTERIOR ELEVATION

SCALE: 1/2" = 1'-0" | 02 | A101



DOOR/FRAME TYPES

SCALE: 1/4" = 1'-0" | 05 | A101



WINDOW TYPES

SCALE: 1/4" = 1'-0" | 06 | A101

GLAZING TYPES:

IGU-1 EXTERIOR STOREFRONT VISION GLASS TYPE:
OVERALL UNIT THICKNESS: 1 5/16"
OUTBOARD LITE: 1/4" CLEAR TEMPERED W/ PPG "SB60" LOW E @ #2.
AIR SPACE: 1/2" WARM EDGE SPACER.
INBOARD LITE: 9/16" CLEAR LAMINATED GLASS WITH DUPONT SENTRYGLAS INTERLAYER.
1/4" CLEAR ANNEALED.
0.090" DUPONT SENTRYGLAS INTERLAYER.
1/4" CLEAR ANNEALED.

IGU-2 ALUMINUM DOORS:
OVERALL UNIT THICKNESS: 1-1/16"
OUTBOARD LITE: 3/16" CLEAR TEMPERED W/ PPG "SB60" LOW E @ #2.
AIR SPACE: 1/2" WARM EDGE SPACER.
INBOARD LITE: 5/16" CLEAR LAMINATED GLASS WITH DUPONT SENTRYGLAS INTERLAYER.
1/8" CLEAR ANNEALED.
0.090" DUPONT SENTRYGLAS INTERLAYER.
1/8" CLEAR ANNEALED.

G-1 INTERIOR STOREFRONT VISION GLAZING:
OVERALL UNIT THICKNESS: 9/16"
GLASS SURFACE 1: 1/4" ANNEALED.
INTERLAYER: 0.090" DUPONT SENTRYGLAS INTERLAYER.
GLASS SURFACE 2: 1/4" CLEAR ANNEALED.

G-2 INTERIOR FIRE-RATED VISION GLAZING:
OVERALL UNIT THICKNESS: 5/16"
GLASS SURFACE 1: 3/16" ANNEALED CERAMIC GLASS.
INTERLAYER: 0.030" DUPONT SENTRYGLAS INTERLAYER.
GLASS SURFACE 1: 3/16" ANNEALED CERAMIC GLASS.

PRINT DATE: 3/12/21

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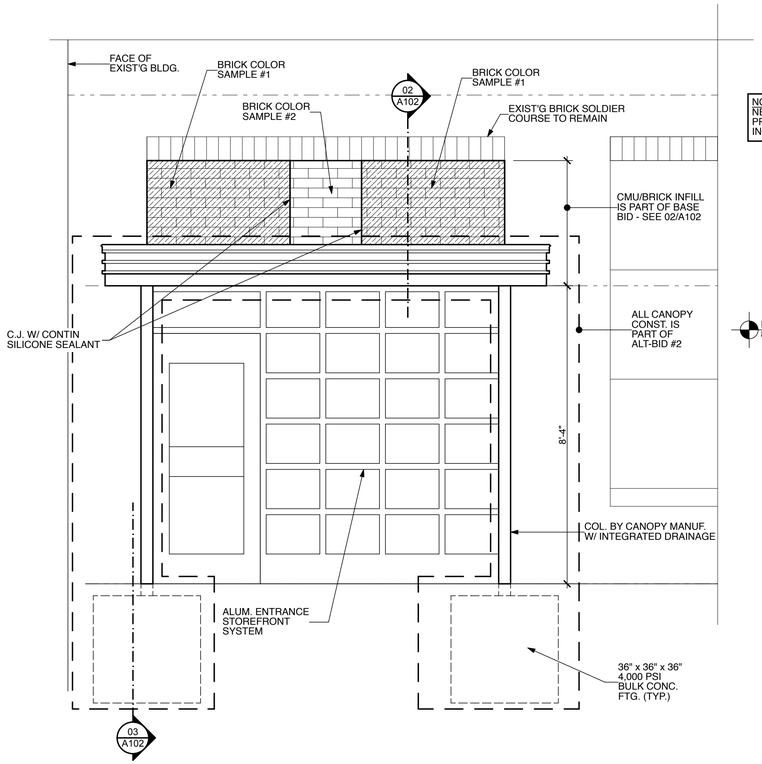
NJDOE SP #2670-090-19-1000

BUILDING ENTRANCES
SECURITY ENHANCEMENT
LINDENWOLD MIDDLE SCHOOL
40 WHITE HORSE AVENUE
LINDENWOLD, NJ 08021

TITLE: DETAILS & INTERIOR ELEVATIONS

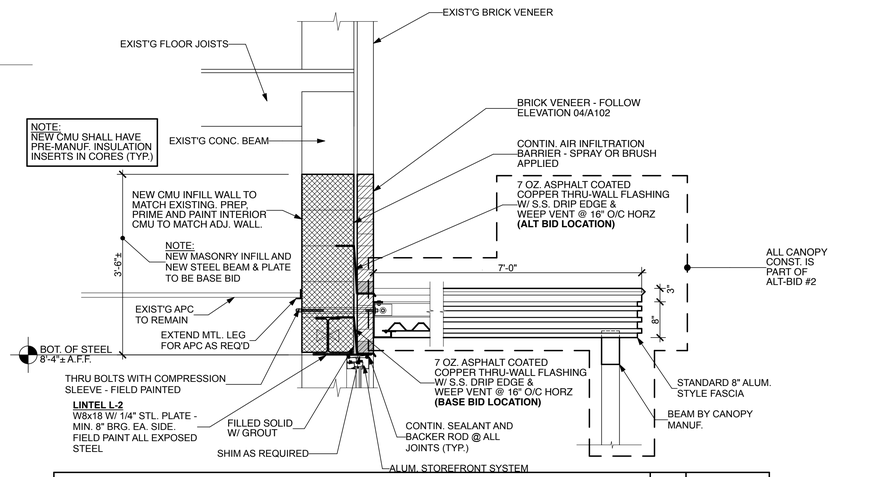
DRAWING DATE:	26 FEB 2021
REVISION DATE:	
DRAWN BY:	PF
COMMISSION NO.:	5643A

MIDDLE SCHOOL
A101
3 OF 4



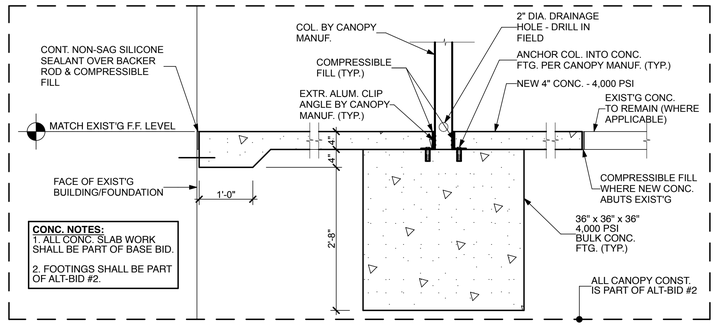
NEW ENTRY ELEVATION

SCALE: 1/2" = 1'-0" | 04 | A102



WALL SECTION

SCALE: 3/4" = 1'-0" | 02 | A102



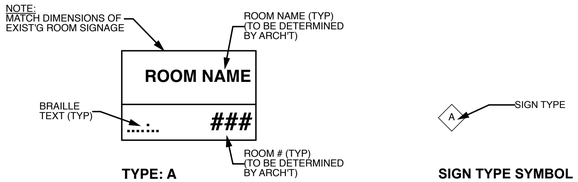
FOOTING DETAIL

SCALE: 3/4" = 1'-0" | 03 | A102

EXIST'G FRONT ELEVATION

SCALE: NTS | 05 | A102

NOTE: NO WORK IN THIS AREA - PHOTO FOR BRICK COLOR ONLY



SIGNAGE MOUTED ON GLASS:

SIGNAGE REQUIRED TO BE MOUNTED TO GLASS SHALL HAVE A BLANK BACK PANEL MADE OF THE SAME MATERIAL AND OF THE SAME SIZE AND COLOR AS THE SIGN ADHERED TO THE OPPOSITE SIDE OF THE GLASS.

MOUNTING LOCATION AND HEIGHT:

WHERE PERMANENT IDENTIFICATION WITH TACTILE CHARACTERS IS PROVIDED FOR ROOMS AND SPACES, SIGNS SHALL BE INSTALLED ON THE WALL ADJACENT TO THE LATCH SIDE OF THE DOOR. AT DOUBLE LEAF DOORS, THE SIGN SHALL BE TO THE RIGHT OF THE RIGHT-HAND DOOR. WHERE THERE IS NO WALL SPACE ON THE LATCH SIDE OF A SINGLE DOOR, OR THE RIGHT SIDE OF DOUBLE DOORS, SIGNS SHALL BE ON THE NEAREST ADJACENT WALL. SIGNS SHALL HAVE AN 18-INCH MINIMUM SPACE ON THE FLOOR OR GROUND, CENTERED ON THE SIGN, BEYOND THE ARC OF ANY DOOR SWING BETWEEN THE CLOSED POSITION AND 45 DEGREE OPEN POSITION. WHERE SIGNS ARE INDICATED TO BE MOUNTED ON A WINDOW OR SIDELITE, A BLANK BACKER PANEL OF THE SAME SIZE AND COLOR AS THE SIGN SHALL BE PROVIDE ON THE OPPOSITE SIDE OF THE GLASS. MOUNTING HEIGHTS SHALL BE AS FOLLOWS:
NOTE: SEE SHEETS A100 FOR SIGNAGE LOCATIONS

60-INCHES MAXIMUM TO 48-INCHES MINIMUM ABOVE FINISH FLOOR TO THE BASELINE OF THE CHARACTERS. (Standard)

MAXIMUM OF 48-INCHES ABOVE FINISH FLOOR TO CENTERLINE OF SIGN. (NJ Children)

RAISED AND BRAILLED CHARACTERS AND PICTORIAL SYMBOL SIGNS:

LETTERS AND NUMERALS SHALL BE RAISED 1/32-INCH, UPPER CASE, SANS SERIF OR SIMPLE SERIF TYPE AND SHALL BE ACCOMPANIED WITH GRADE 2 BRAILLE. RAISED CHARACTERS SHALL BE AT LEAST 5/8-INCH HIGH, BUT NO HIGHER THAN 2-INCHES. PICTOGRAMS SHALL BE ACCOMPANIED BY THE EQUIVALENT VERBAL DESCRIPTION PLACED DIRECTLY BELOW THE PICTOGRAM. THE BORDER DIMENSION OF THE PICTOGRAM SHALL BE 6-INCHES MINIMUM IN HEIGHT. REFER TO TABLE 703.2.4 & 703.4.3 IN ANSI A117.1-2009 FOR REQUIRED CHARACTER AND BRAILLE DIMENSIONS.

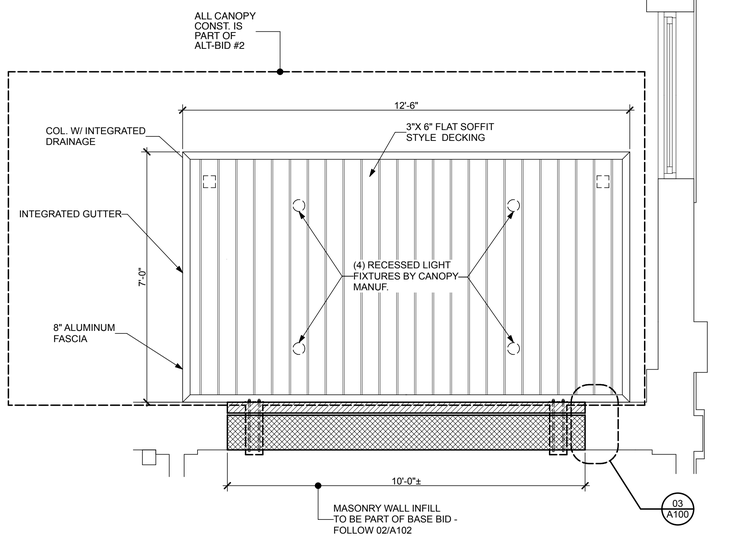
FINISH AND CONTRAST:

THE CHARACTERS AND BACKGROUND OF SIGNS SHALL BE MATTE, OR OTHER NON-GLARE FINISH. CHARACTERS AND SYMBOLS SHALLCONTRAST WITH THEIR BACKGROUND EITHER LIGHT CHARACTERS ON A DARK BACKGROUND OR DARK CHARACTERS ON A LIGHT BACKGROUND.

REFER TO ICC/ANSI A117.1-2009 FOR ADDITIONAL REQUIREMENTS

BARRIER FREE/SIGNAGE TYPES

NOTE: SEE SHEET A100 FOR SIGNAGE LOCATIONS



PRE-FABRICATED CANOPY PLAN

SCALE: 1/2" = 1'-0" | 01 | A102

PRINT DATE: 3/13/21

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NJDOE SP #2670-090-19-1000

BUILDING ENTRANCES
SECURITY ENHANCEMENT
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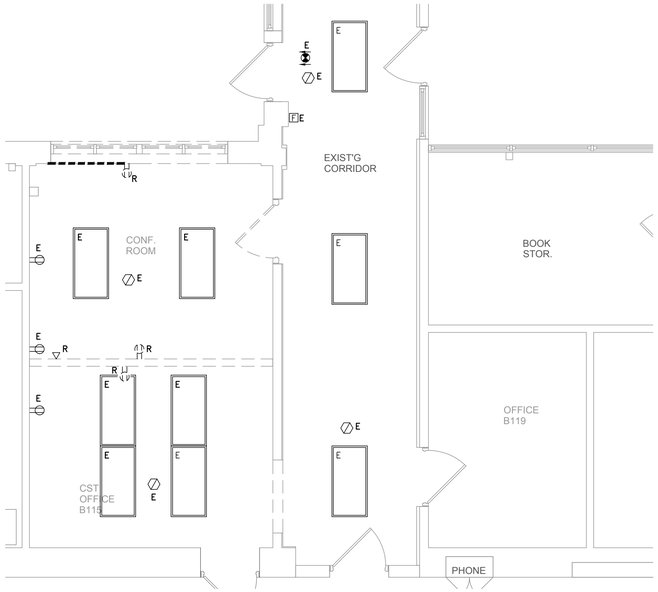
40 WHITE HORSE AVENUE
LINDENWOLD, NJ 08021

TITLE: CANOPY DETAILS & SIGNAGE

DRAWING DATE:	26 FEB 2021
REVISION DATE:	
DRAWN BY:	PF
COMMISSION NO.:	5643A

MIDDLE SCHOOL

A102



1 / E100 PARTIAL FLOOR PLAN – ELECTRICAL DEMOLITION

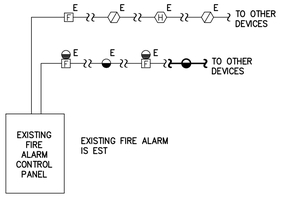
SCALE 1/4" = 1'–0"

NOTE:

1. EXISTING DEVICES ARE PRESENT THAT ARE BEING REMOVED/RELOCATED VIA THE OWNER, THESE ARE NOT SHOWN, REFER TO GENERAL NOTES AND ARCHITECTURAL DRAWINGS, TYPICAL.

DEMOLITION NOTES:

1. THESE DEMOLITION PLANS ARE INTENDED TO BE USED AS A GUIDE TO THE CONTRACTOR. ALL DEMOLITION WORK REQUIRED, OR NECESSARY FOR THE INSTALLATION OF NEW WORK OR THE REMOVAL OF EXISTING EQUIPMENT, IS HEREBY INCLUDED, WHETHER SHOWN ON THESE PLANS OR NOT. REFER TO DRAWINGS OF ALL TRADES FOR ADDITIONAL WORK, AND COORDINATE IN THE FIELD.
2. THE CONTRACTOR SHALL VERIFY ACTUAL SITE CONDITIONS PRIOR TO SUBMITTING HIS BID. THE CONTRACTOR SHALL INCLUDE ALL DEMOLITION WORK NECESSARY FOR THE EFFECTIVE INSTALLATION AND PERFORMANCE OF NEW SYSTEMS. THE CONTRACTOR SHALL ALSO INCLUDE TEMPORARY REMOVAL AND REINSTALLATION OF EXISTING WORK WHEREVER NECESSARY. THE OWNER SHALL NOT ACCEPT EXTRA COSTS ASSOCIATED WITH THE DEMOLITION AND/OR TEMPORARY REMOVAL/REINSTALLATION WORK FROM THE CONTRACTOR.
3. THIS CONTRACTOR SHALL REMOVE ALL LIGHTING FIXTURES AND ELECTRICAL DEVICES AS INDICATED ON THE DEMOLITION PLANS, OR THAT ARE NO LONGER NEEDED BY THE OWNER. ALL EXISTING WIRING AND CONDUIT WHERE NO LONGER REQUIRED SHALL BE REMOVED BACK TO EXISTING PANEL. ALL EXISTING DISCONNECTED CIRCUITS NOT BEING REUSED SHALL BE TURNED OFF AND LABELED "SPARE". WHERE CONDUITS ARE INACCESSIBLE, REMOVE WIRE AND ABANDON CONDUITS.
4. IT IS THE CONTRACTORS RESPONSIBILITY TO VERIFY POWER IS BEING PROVIDED TO ALL EXISTING EQUIPMENT REQUIRED TO REMAIN IN SERVICE. RECONNECT ALL DISTURBED FACILITIES WHICH ARE EXISTING TO REMAIN AND PLACE THEM IN OPERATIONAL CONDITION.
5. REMOVE ALL WIRING DEVICES FROM WALLS TO BE DEMOLISHED. REMOVE EXISTING LIGHT SWITCHES WHERE NO LONGER REQUIRED. REUSE ALL EXISTING CONCEALED CONDUIT AND RECESSED DEVICE BOXES WHERE POSSIBLE. ABANDON BOXES IF THEY ARE IN EXISTING WALLS TO REMAIN. PATCH WALLS OVER ABANDONED BOXES TO MATCH ADJACENT SURFACES.
6. REMOVE ABANDONED OUTLET BOXES, SURFACE METAL RACEWAY AND CONDUIT THAT WOULD BE EXPOSED, AND REPAIR DISTURBED SURFACES TO MATCH ADJACENT AREAS.
7. MAJOR PIECES OF EQUIPMENT ARE TO BE TURNED OVER TO THE OWNER FOR HIS USE, OR AT THE OWNER'S DISCRETION, REMOVED FROM THE SITE AND DISPOSED OF, IF NO LONGER REQUIRED.
8. PATCH ALL WALLS TIGHT AT REMOVALS. MAINTAIN FIRE RATINGS AS REQUIRED.
9. THE CONTRACTOR SHALL REFER TO THE ARCHITECTURAL DRAWINGS FOR THE EXTENT OF WALL FINISHES AND CEILINGS TO BE REPLACED. ALL EXISTING DEVICES TO REMAIN SHALL BE TEMPORARILY DISCONNECTED AND REINSTALLED. WHERE TEMPORARY REMOVAL IS NOT POSSIBLE THE CONTRACTOR SHALL PROVIDE TEMPORARY SUPPORT OF EXISTING EQUIPMENT IN PLACE.
10. THE EXISTING FIRE ALARM SYSTEM SHALL BE MAINTAINED THROUGHOUT DEMOLITION AND CONSTRUCTION. PROVIDE TEMPORARY SUPPORT OF EXISTING DEVICES AS REQUIRED. THE CONTRACTOR SHALL NOTIFY THE FIRE MARSHAL UPON ANY MODIFICATIONS TO OR ANY NECESSARY INTERRUPTION IN SYSTEM OPERATION. NOTE THAT COVERING DEVICES DURING CONSTRUCTION IS AN INTERRUPTION TO COVERAGE.



4 / E100 FIRE ALARM SYSTEM RISER DIAGRAM

SCHEMATIC

FIRE ALARM SYSTEM NOTES:

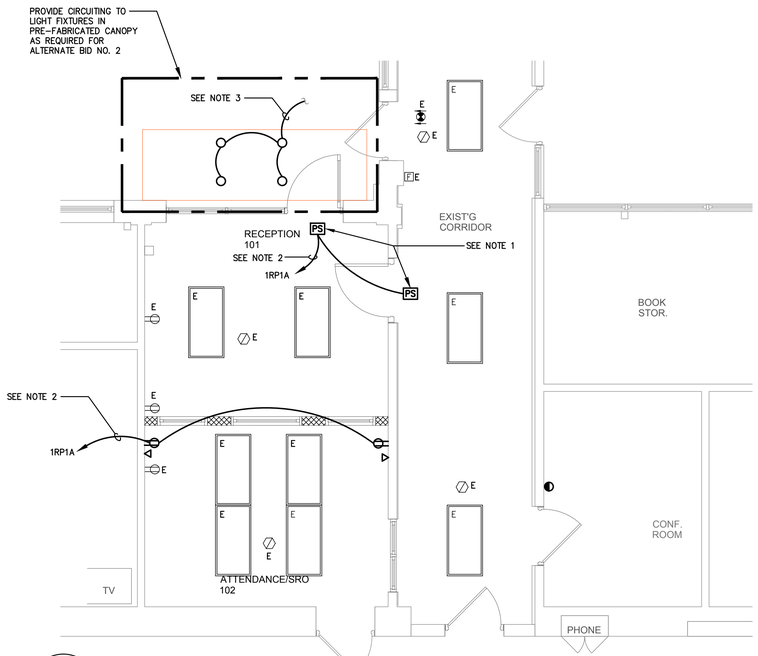
1. PROVIDE ALL WIRING AS RECOMMENDED BY MANUFACTURER. ALL WIRING SHALL MATCH EXISTING.
2. CONTRACTOR IS RESPONSIBLE FOR INSURING THAT FIRE ALARM SYSTEM MODIFICATIONS MEET ALL APPLICABLE CODES AND FOR OBTAINING FINAL APPROVAL FROM LOCAL FIRE INSPECTOR(S).
3. PRIOR TO STARTING WORK, PREPARE SHOP DRAWINGS INCLUDING ALL INFORMATION REQUIRED UNDER IBC–2018, SECTION 907.1.2. SUBMIT SHOP DRAWINGS TO ENGINEER FOR REVIEW AND APPROVAL. ONCE APPROVED, SUBMIT SHOP DRAWINGS TO CODE REVIEWER/INSPECTOR(S) FOR APPROVAL.
4. EXPAND EXISTING FIRE ALARM SYSTEM AS REQUIRED TO CONNECT NEW DEVICES. PROVIDE ALL NEW HARDWARE, RELAYS, MODULES, WIRING, BATTERIES, ETC., AS NECESSARY FOR COMPLETE INSTALLATION.
5. PROVIDE ALL PROGRAMMING BY A FACTORY CERTIFIED VENDOR AS REQUIRED TO MAKE THE NECESSARY MODIFICATION TO THE SYSTEM. INCLUDE ANY HARDWARE, WIRING, OF COMPONENTS NECESSARY FOR CONTINUED REUSE.
6. PROVIDE AT EACH LOCATION SHOWN, AUDIO/VISUAL DEVICES WITH OUTPUT LEVELS AS RECOMMENDED BY MANUFACTURER FOR THE SPACE TO COMPLY WITH ADA & CODE REQUIREMENTS. PROVIDE ADDITIONAL DEVICES TO THOSE SHOWN IF/AS REQUIRED TO MEET LEVELS AT NO ADDITIONAL COST.
7. ALL FIRE ALARM CONTROL PANELS, REMOTE ANNUNICIATORS, AND BOOSTER PANELS SHALL HAVE SMOKE DETECTORS COVERAGE ABOVE. PROVIDE DEVICES WHETHER SHOWN ON PLANS OR NOT.
8. UPON COMPLETION OF FIRE ALARM WORK, PROVIDE A RE–ACCEPTANCE TEST OF THE ENTIRE SYSTEM PER NFPA 72.

SYMBOL LIST & ABBREVIATIONS

	LIGHT FIXTURE
GFI	DUPLEX RECEPTACLE, 20A, 125V, 2 POLE, U–GROUND SLOT, GFI INDICATES GROUND FAULT INTERRUPTION
	VOICE/DATA/VIDEO OUTLET – 4" X 4" OUTLET BOX WITH 1–1/4"C STUBBED UP ABOVE NEAREST ACCESSIBLE CEILING VERIFY LOCATION IN FIELD
F	FIRE ALARM MANUAL PULL STATION
	FIRE ALARM SMOKE DETECTOR
H	FIRE ALARM HEAT DETECTOR
	FIRE ALARM VISUAL DEVICE (STROBE)
F	FIRE ALARM AUDIO/VISUAL DEVICE
	208/120V PANELBOARD
	WIRE & CONDUIT, CONCEALED IN CEILING OR WALL
	HOMERUN TO PANEL, NUMERAL INDICATES CIRCUIT NUMBER
	CONNECTION TO EQUIPMENT
AFF	ABOVE FINISHED FLOOR
E	EXISTING TO REMAIN
R	EXISTING TO BE REMOVED
ER	EXISTING TO BE REMOVED

GENERAL NOTES:

1. THE DISTRICT WILL BE RESPONSIBLE TO REMOVE AND RELOCATE ALL EXISTING FIRE ALARM DEVICES, TIME CLOCKS, PHONE LINES, BURGLAR ALARMS, SECURITY/TV, ETC.
2. THE CONTRACTOR FOR THE VESTIBULE–BID WORK WILL PROVIDE THE ELECTRIFIED DOOR HARDWARE AS PART OF THE NEW DOORS AND STOREFRONTS, HOWEVER THE DISTRICTS SECURITY VENDOR WILL BE REQUIRED TO WIRE THE HARDWARE BACK TO THEIR AIPHONE OR OTHER METHOD OF RETRACTING THE DOOR LOCKS.

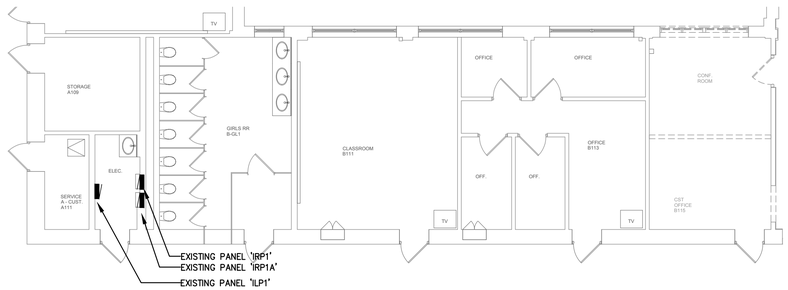


2 / E100 PARTIAL FLOOR PLAN – ELECTRICAL

SCALE 1/4" = 1'–0"

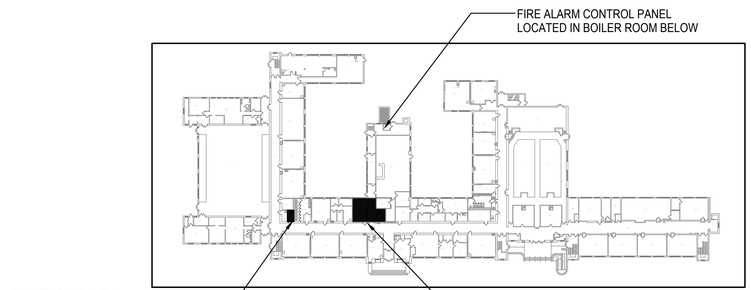
NOTES:

1. PROVIDE CONDUIT AND PULLWIRE FROM POWER SUPPLY TO ACCESS CONTROL DEVICES, INCLUDING BUT NOT LIMITED TO CARD READER, INTERCOM, ELECTRIC STRIKE, DOOR CONTACTS AND REQUEST TO EXIT. FIELD COORDINATE WITH SCHOOL'S IT VENDOR. ACCESS CONTROL DEVICES AND WIRING WILL BE BY SCHOOL'S IT VENDOR.
2. PROVIDE AND CONNECT TO NEW 20A/1P CIRCUIT BREAKER IN EXISTING PANEL, CIRCUIT VIA 2 #12 & 1 #12 GRD – 3/4"C.
3. CONNECT TO EXISTING EXTERIOR LIGHTING CIRCUIT, VIA 2 #12 & 1 #12 GRD – 3/4"C.



3 / E100 PARTIAL FLOOR PLAN – ELECTRICAL

SCALE 1/8" = 1'–0"



KEY PLAN NTS

March 12, 2021 – 3:15:21 pm
Drawing: 2954 MS ED1.1.dwg

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PRINT DATE: 1/8/21

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NJDOE SP # 2670-090-19-1000

BUILDING ENTRANCES
SECURITY ENHANCEMENTS

LINDENWOLD MIDDLE SCHOOL
40 WHITE HORSE AVENUE
LINDENWOLD, NJ 08021

TITLE: PARTIAL FLOOR PLAN, SCHEDULE & SYMBOL LIST - ELECTRICAL

DRAWING DATE: 26 FEB 2021
REVISION DATE:
DRAWN BY:
COMMISSION NO.: 5643A

MIDDLE SCHOOL

E100

1 OF 2

GENERAL REQUIREMENTS

This Section is coordinate with and complementary to the General Conditions and Special Requirements.

Drawings are diagrammatic. Sizes and locations of equipment are shown to scale where possible, but may be distorted for clarity on the Drawings. Final locations shall be as required or directed.

Light and power and system riser diagrams and schematic diagrams generally indicate equipment and connections to be used for various systems. System conduit and wiring shall be as required. Provide all work shown on diagrams whether or not it is duplicated on the plans.

SCOPE OF WORK

In general the work includes, but is not limited to the following:

1. Raceways and installation components.
2. Wire and Cable.
3. Panelboards (modifications)
4. Grounding.
5. Testing.
6. Seismic restraints.
7. Furnishing of access doors.
8. Furnishing and setting of all sleeves through the floors, roof, and walls where required, including waterproofing, and fireproof sealing, and cap flashing.
9. Cutting, drilling and boring associated with electrical work.
10. Prime painting, where required for electrical equipment and installation.
11. Final connection of all equipment unless otherwise noted.

QUALITY ASSURANCE AND STANDARDS

The complete installation shall be in accordance with NJUCC (The State Building Code).

Contractor to be responsible for securing all necessary permits and obtaining all necessary approvals. He shall complete all necessary forms and pay all necessary fees.

SUBMITTALS

The Contractor shall submit shop drawings for all systems and components with such promptness as to cause no delay in his own work or that of another contractor.

EXAMINATION OF EXISTING CONDITIONS ON PREMISES

Before submitting his bid, this Contractor shall visit the site of the work and shall thoroughly familiarize himself with the existing conditions affecting the work. By the act of submitting a bid, the Contractor shall be deemed to have made such an examination, to have accepted such conditions, and to have made allowance therefore in preparing his bid. No additional compensation will be granted on account of extra work made necessary by the Contractor's failure to investigate such existing conditions. Verify all grades, elevations, dimensions, and clearances at the site.f

COORDINATION OF WORK WITH OTHER TRADES

The contractor shall coordinate the work of this Section with the work of all other Contracts and all the Utility Companies. It shall be so arranged that there will be no delay in the proper installation and completion of all work.

INSPECTION AND TESTS

The entire wiring system must test free from short and open circuits. Every ground shall be tested for compliance with standards listed below.

PROTECTION, MAINTENANCE AND PRODUCT HANDLING OF ELECTRICAL EQUIPMENT

Electrical equipment shall be delivered and stored at the site, properly packed and crated until finally installed.

Provide effective protection against damage for all material and equipment during shipment and storage at the Project Site.

This Contractor shall be responsible for the maintenance of all installed equipment and systems until final acceptance by the Owner.

GUARANTEE

This Contractor shall guarantee in writing to the Owner that all work installed by him shall be free of defects in workmanship and materials and that all apparatus will develop the capacities and characteristics as indicated, and that, if during a period of two years from date of final approval of work by the Architect, any defects in workmanship, materials or performance appear, he will remedy them without any cost to the Owner.

ACCESSIBILITY AND MEASUREMENTS

All work shall be installed so as to be readily accessible for operation, maintenance, and repair. Minor deviations from the plans may be made to accomplish this, subject to approval.

Before ordering any material or doing any work, the Contractor shall verify all measurements at the Building, and shall be responsible for the correctness of same as related to the work under this Contract.

IDENTIFICATION NAMEPLATES

Identify and mark all electrical equipment to meet OSHA standards and as specified herein.

Unless otherwise noted, nameplates shall be black laminate with white letters of uniform size consisting of reasonably large capital letters, 3/16 inch minimum.

SEISMIC RESTRAINTS

Provide lateral restraints for all electrical equipment installed on project; i.e., Battery racks, ballast racks, cable trays, conduit, generators, lighting fixtures, panels and transformers. Typically, lateral restraints shall consist of angle iron and "uni-strut" bracing, cross bracing, hanger rods, anchor clips, expansion shield anchor bolts, etc. The purpose of the restraints is to provide resistance to lateral (horizontal) movement during earthquake.

All equipment shall be anchored to the floor, ceiling structure or walls.

All suspended equipment, wiring trough and conduit trade size 2-1/2" or larger shall have (lateral) horizontal bracing capable of resisting 50% of the equipment weight. Horizontal bracing shall be placed at each point where vertical supports are specified or required.

All life safety equipment, and conduit shall have lateral bracing capable of resisting 100% of the equipment weight.

Stem mounted fixtures shall have stems and swivel canopies designed for seismic loads. Ceiling outlet boxes and hangers for stem-mounted fixtures shall have lateral bracing capable of withstanding full vertical load. Lateral bracing shall be attached to the ceiling (at an angle) or wall structure.

Recessed and surface mounted light fixtures must be secured to the ceiling system so as to resist 50 % of their weight laterally; i.e. a 40 pound fixture must be resistant to a 20 pound lateral force. Life safety lighting fixture must be secured to the ceiling system so as to re-sit 100% of their weight laterally. Suitable anchor clips must be provided for all lay-in fixtures. Surface mounted fixtures must be supported at two points in addition to the outlet box.

RACEWAYS AND INSTALLATION COMPONENTS

The requirements of this Section apply to raceway work specified elsewhere in these specifications.

The work includes the providing of completely coordinated grounded raceway systems complete with boxes, fittings, flexible connections to vibrating equipment and accessories, as specified and as required for a complete system.

The work permits the use of metal-clad cable in conjunction with conduit. See below.

Raceways and fittings shall be manufactured by Triangle or approved equal by Allied or Republic.

Rigid steel conduit shall be full weight steel pipe, hot dip galvanized inside and outside, threaded, minimum 3/4 inch.

Intermediate metal conduit (IMC) shall be intermediate steel pipe, hot dip galvanized, threaded, minimum 3/4 inch.

Electric metallic tubing (EMT) shall be steel thin wall pipe, galvanized, threadless, minimum 3/4 inch, maximum 2 inch.

Flexible steel conduit (Greenfield) shall be continuous single strip, galvanized, minimum 3/4 inch.

Liquid-tight flexible steel conduit (Seal-tite) shall be zinc coated, consist of flexible galvanized steel tubing over which is extruded a liquid-tight sheathing of polyvinyl chloride (PVC). Conduit shall be provided with a continuous copper bonding conductor would spirally between the convolutions.

Rigid steel and IMC conduit fittings shall be standard threaded couplings, locknuts, bushings, and elbows. Material shall be steel or malleable iron only.

Electrical metallic tubing fittings shall be compression waterproof connection type. Set screw or indent type connectors are not permitted.

Flexible steel conduit (Greenfield) fittings shall be multiple point type, threading into the internal wall of the conduit convolutions, and shall have insulated throat.

Liquid-tight flexible metal conduit fittings shall incorporate a threaded grounding cone, a steel or plastic compression ring, and a gland for tightening. Connectors shall have insulated throats.

Expansion and deflection couplings shall be manufactured by O-Z/Gedney, Crouse-Hinds, Appleton or approved equal.

Individual conduit hangers, shall be designed for the purpose, and have pre-assembled closure bolt and nut, and provisions for receiving hanger rod.

Multiple conduit (trapeze) hangers shall be not less than 1-1/2 by 1-1/2 inch, 12 gauge steel, cold formed, lipped channels. Hanger rods shall be not less than 3/8-inch diameter steel.

Solid masonry and concrete anchors shall be a type approved for the purpose.

Provide and assume responsibility for locating and maintaining in proper position all sleeves required for the work.

Openings through floors and walls in which cables, conduits, or pipe pass shall be sealed by U.L. classified smoke and fire stop fittings, and have an hourly rating equal to the fire rating of the floor or wall. Fittings shall be similar to O-Z/Gedney Type "CFS" or "CAFS".

Penetrations through fire-rated floors in which wiring for floor service outlets are routed shall be sealed by U.L. classified smoke and fire-stop fittings, and shall have an hourly rating equal to the floor rating. Fittings shall be similar to O-Z/Gedney Type "PTFS".

Outlet boxes shall be manufactured by Raco, RussellStoll, Steel City, Thomas & Betts or Crouse Hinds.

Outlet boxes for concealed work shall be galvanized steel, 4 in. square or octagon (except as otherwise required by construction, devices or wiring). Provide sufficient depth for application.

Outlet boxes located outdoors and in damp locations shall be weatherproof.

Offset back-to-back outlets shall have minimum 6 in. separation between them. In rated walls, they are to be separated by a stud

Junction, splice and pull boxes shall be made of code gauge sheet steel with removable covers fastened with brass or stainless steel screws, except as noted, and will include insulated supports for cables. Box dimensions shall conform to N.E.C. requirements.

Provide junction, splice and/or pull boxes as noted or as required to facilitate pulling of conductors or in raceway runs that have more than three (3) 90-degree bends.

For indoor applications, boxes shall have a gray enamel finish. For outdoor and damp locations, boxes shall be galvanized.

Wireways shall be as manufactured by Square D, General Electric, or approved equal.

Wireways shall be square, brake-formed of code gauge steel, furnished in standard 10-foot sections with knockouts as required. Wireways shall be of the screw cover type and all necessary offset and elbow fittings. They shall have a gray enamel finish. Size shall be as required for proper cable fill.

Install raceway and installation components as indicated, in accordance with manufacturer's written instructions, applicable requirements of NEC and in accordance with the recognized industry practices, to ensure that products serve intended function.

Raceway supports shall be provided by means of ceiling trapeze, strap hangers, or wall brackets. Use structural steel angles or channels, or manufactured steel support system. Spacing of supports shall be as per NEC and per manufacturer's recommendations but in no case shall exceed 8'-0" on centers. Provide U-bolts at each floor level for riser raceways and anchor to acceptable supports. Secure raceways to supports with pipe straps or U-bolts.

Mechanically join all metal raceways, enclosures and junction boxes to assure continuity.

Branch circuit conduits shall be supported by the building structure.

Conduits located underground beyond the building for branch wiring shall be installed with a minimum of 30 in. top cover as shown on the drawings.

Provide expansion-deflection fittings at expansion joints in accordance with manufacturer's recommendations. Expansion-deflection fittings shall be used for all trade sizes 1-1/4" or larger. For trade sizes up to 1" in size, a suitable length of flexible conduit (or liquid-tight flexible conduit) with sufficient slack for movement and grounding conductor fastened on each side of joint shall be permitted.

Rigid steel conduit shall be used for underground installation; in wet, damp or wash down locations; for exposed runs on the exterior of the building; embedded in concrete or masonry or below concrete that is in contact with earth.

Intermediate metal conduit (IMC) may be used in place of rigid steel in dry locations only.

EMT is to be used for feeders and branch circuits in dry locations such as hung ceilings, interior hollow block walls and furred spaces.

Flexible steel conduit shall be used in dry locations for short connections where rigid conduits or tubing is impracticable, and for final connections to lights and equipment other than motors and transformers.

Liquid-tight flexible steel conduit shall be used in damp locations for final connections to motor terminal boxes, transformers, and other vibrating equipment in damp and dry locations.

In general, cutting and core drilling is to be avoided. Where it becomes necessary, locations are to be coordinated with other trades, the Owner and the structural engineer. There is to be no cutting or core drilling without prior approval.

Provide an outlet box for each lighting fixture and device shown, or required, in the wiring system.

Provide galvanized steel extension rings (depth as required) and raised cover plates in plaster, dry wall, masonry and tile walls.

Mount outlet boxes for similar equipment at uniform height within same or similar areas.

Outlet boxes for fixtures recessed in non-accessible ceilings shall be accessible through the opening created by the removal of the fixture or through access doors provided by this contractor.

All outlet boxes in finished areas for convenience receptacles or local switches shall be 4" square and 1-5/8" deep minimum. Provide with regular deep switch extension cover.

Boxes for use with surface mounted raceways shall be of the same construction and manufacture as the raceway.

Provide junction, splice and pull boxes where required to facilitate installation of wiring, whether or not shown on Drawings. Size boxes according to code, and provide interior partitions, insulated supports, hot dip galvanized angle iron braces, screw-on one-piece or split covers, ground connectors, and other accessories as required.

All outdoor installations shall be weatherproof.

Support all material from the building structure in an approved manner.

Where electrical equipment is mounted in suspended ceiling panels, provide support members to span between runners of ceiling suspension system. Do not support electrical equipment from acoustical panels or other ceiling material; attach to this material for alignment only.

Where electrical outlet boxes, lighting fixtures, and other equipment is installed on tee bars of suspended ceilings, use independent support clips with threaded studs. Do not attach to tee bar except for alignment; use clip similar to Caddy "TDS" that snaps around tee bar and has provisions for independent support wire. Attach a suitable anchor in the structure above ceiling, and suspend a minimum No. 12 support wire to engage the clip.

Do not exceed manufacturer' load rating for mounting devices.

At drywall partitions, provide support members to carry weight of equipment; do not use drywall material to carry any weight.

WIRE AND CABLE

The work includes providing wire and cable complete with all accessories in accordance with Drawings and Specifications and as required for a complete system. Wiring size referenced in this Section shall be AWG, except as noted

This project has been designed for copper conductors. Aluminum conductors are not acceptable and shall not be used. Cable shall be manufactured by Triangle or approved equal by Carol or Guardian Products.

No. 10 and smaller conductors shall be ASTM Standard, solid, copper; and, No. 8 and larger conductors shall be ASTM standard, stranded copper.

Minimum conductor size shall be No. 12 for lighting and power and No. 14 for control and alarm. Increase wire sizes as required for long runs to overcome voltage drop.

Communications and signal wiring shall conform to the recommendations of the manufacturer's communication and signal systems and shall be specified in respective Sections of these Specifications.

"THWN" or "XHHW" insulation shall be used for interior branch circuit and feeder wiring. Rating shall be 90°C in dry locations and 75°C in wet locations.

Green colored insulated wire shall be used for all grounding applications.

Phase wires shall be color-coded as follows:

1. 120/208 volt system: Black for A phase
   Red for B Phase
   Blue for C Phase

Neutral conductors shall be white for 120/208 volts.

Provide O-Z/Gedney Type "CSB" series or approved equal seal fittings between the wire and conduit for all cable and wire entering the building from underground, including service cables.

Not more than 3 current carrying conductors shall be in one (1) conduit unless otherwise indicated. Provide one neutral conductor for each 3 phase 4 wire homerun to a panelboard unless otherwise noted.

MC cable shall comply with the NEC article 330. MC cable shall be as manufactured by AFC or approved equal by Guardian Products.

MC cable shall include a green insulated ground wire of the same size as the other conductors.

Run MC cable in dry hollow metal partitions and above suspended ceilings. Install cable as slack span; do not pull tight. Maintain at least 6" clearance between parallel runs of light and power wiring to avoid inductive coupling. Maintain at least 24" clearance from hot water and steam piping. Provide conduit sleeves through walls and partitions that obstruct horizontal passage of wiring, and seal sleeves after installation of cables. Cable shall be secured by approved staples, hangers or similar fittings independent of ceiling grids or supports.

MC cable shall be used in conjunction with conduit. Cable shall only be permitted for single phase circuits in hollow metal walls and above accessible ceilings. Single phase cable runs shall be gathered into three phase conduit homeruns. In no case shall cable enter directly into panelboards.

Secure MC cable to ceiling structure at intervals not to exceed 6 feet and within 12 inches of every outlet box, junction box, or fitting.

Make wire splices electrically and mechanically secure. Install small wire connectors so that no bare conductor is exposed. Tighten bolts on large conductor connectors so that conductor is deformed, but do not break strands of wire. Use compression tool with proper die for compression connectors in accordance with manufacturer's recommendations, so that conductors are deformed but not broken. Apply insulation over splice so that insulation thickness is at least 1-1/2 times that on conductor. Lap applied insulation at least 1" over conductor insulation so that no bare conductor is exposed.

In general, all feeders No. 8 and larger shall be continuous from point of origin to equipment being served. Splices shall only be used where necessary and with prior written approval of the Engineer.

Terminate conductors on terminal strips in equipment where terminal strips are used. Provide appropriate connectors, or hook conductors around terminal screws as required.

Provide encapsulated splice kits (3-M type 85 series or approved equal) for all splices in areas subject to moisture, including wet locations inside buildings and underground handholes, manholes, and buried junction boxes. Install splice kit in accordance with manufacturer's recommendations, and make splice waterproof. Apply sealing putty to surround each cable. Install mold body so that resin covers each cable sheath by a minimum of one inch.

All copper conductors No. 8 & larger shall be terminated, spliced, and tapped with color-keyed compression connectors, as manufactured by Thomas & Betts Co., Series 54000, Ideal Industries Series 87000, or approved equal. The manufacturer's recommended tooling shall be used. Mechanical type connectors shall not be used.

All copper conductors No. 10 AWG & smaller shall be terminated and spliced with Ideal Industries wing-nut wire connectors or approved equal compression connectors. The flame-retardant thermoplastic insulated type shall be used to isolate the terminal from other metal parts and equipment.t

Use insulating boots supplied for compression connectors or fill joint with "Scotchfill" insulating putty and serve (3) 1/2 lap layers of "Scotch" #33 electrical tape.

WIRING DEVICES AND INSTALLATION COMPONENTS

All local switches near doors shall be located at strike side of door as finally hung, whether so indicated on the Drawings or not.

Height of outlets from finished floor to centerline of outlet shall be as follows:

Receptacle outlets: 1'-6", unless otherwise noted

Wall switch outlet: 3'-8"

Wall switch outlet at borrowed light: 3'-0"

* The top of the wall device is to be even with the top of the door frame (±7'-0) rough-in outlet box accordingly.

Wiring devices and installation components shall be manufactured by Hubbell, Bryant Electric, Pass & Seymour, Leviton, Cooper Industries-Arrow Hart, or General Electric.

Switches shall be heavy-duty specification grade, toggle, quiet type, fully enclosed in composition cases, color as selected by Architect at shop drawing stage. They shall be rated 20 amp, 120/277 volt, AC.

Receptacles shall be the grounding type, composition base, meeting NEMA standards, publication WD-1-1971, color as selected by Owner.

Duplex Convenience Receptacles shall be 20 amps, 125 volts, 2 pole, 3 wire, U ground slot type, Hubbell No. BR20.

Special purpose Single Receptacles shall be 20 amps, 125 volts, 2 pole, 3 wire, twist-lock type, Hubbell No. 2310.

Ground Fault Interrupter Duplex Receptacles: 20 amps, 125 volts, 2 pole, 3 wire, Hubbell No. GF-5352, with weatherproof cover, Hubbell No. 5221.

Where more than one switch or receptacle is being installed, provide multiple gang plates for number of devices as required.

Plates shall be beveled stainless steel satin chrome finish #302, of minimum .035" thickness.

Manual motor starters shall be Allen Bradley Bulletin 600 or approved equal by Square D or General Electric and shall be horsepower rated, and voltage rated for the motor load.

Wallboard and masonry shall fit snuggly to all sides of outlet boxes, grout and patch as required.

Convenience receptacles shall be mounted with ground pole up, except those mounted above counter levels.

Local wall switches and receptacles shall be mounted vertically unless otherwise indicated.

PANELBOARDS

Panel circuit breaker overcurrent protective devices shall be as scheduled on the Drawings and as specified. All breakers shall be bolted-on thermal magnetic type

Panel circuit breakers shall be rated for 10,000 RMS symmetrical amperes minimum interrupting rating at 120/208 volts. Provide higher ratings as required or as scheduled on the Drawings.

Provide handle-locking attachments for all circuit breakers serving emergency lights, exit lights, clocks, and other functions indicated.

Furnish and install a typewritten circuit directory. Hand written will not be accepted.

March 11, 2021 - 5:04:25 pm
Drawing: 2854 MS E01.1.dwg

KELTER & GILLIGO
consulting engineers
P.O. BOX 777 14 WASHINGTON RD.
PRINCETON JUNCTION NEW JERSEY 08550

Frank Tindall, P.E.
Professional Engineer
NJ 38656

PRINT DATE: 1/8/21

REGAN YOUNG, AIA
21A100912100

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+1(609)265-2652-4033(FAX - 21A100912100 - RYEBREAD.COM

NJDOE SP # 2670-090-19-1000

BUILDING ENTRANCES
SECURITY ENHANCEMENTS

LINDENWOLD MIDDLE SCHOOL
40 WHITE HORSE AVENUE
LINDENWOLD, NJ 08021

TITLE: SPECIFCATIONS - ELECTRICAL

DRAWING DATE: 26 FEB 2021
REVISION DATE:
DRAWN BY:
COMMISSION NO.: 5643A

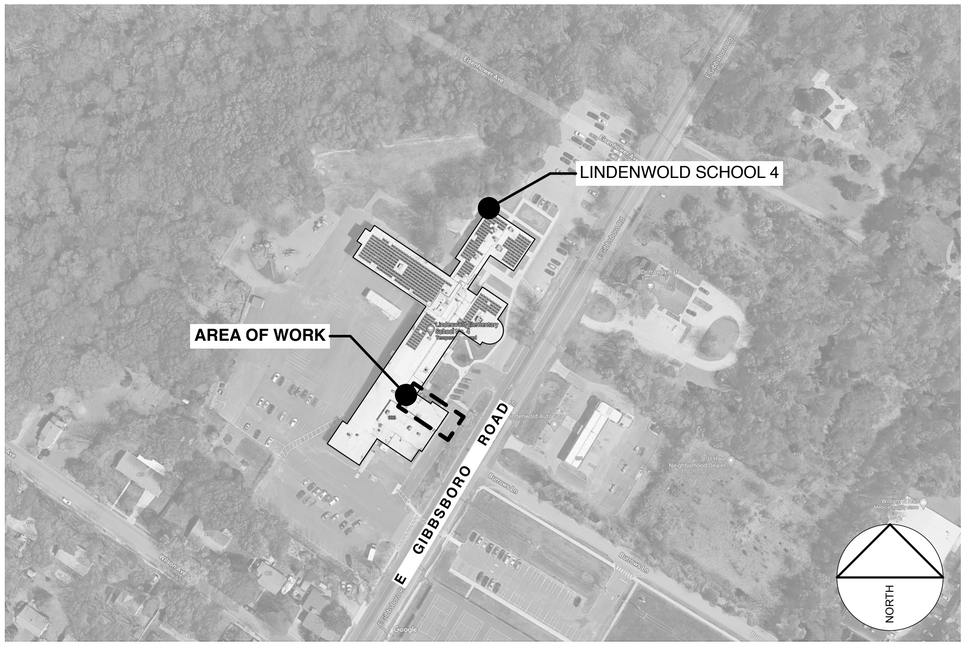
MIDDLE SCHOOL

E200

2 OF 2

BUILDING ENTRANCES SECURITY ENHANCEMENT
LINDENWOLD SCHOOL 4

BLOCK 64, LOT 1; BLOCK 65, LOT 1 & BLOCK 66, LOT 1
900 EAST GIBBSBORO ROAD
LINDENWOLD, NJ 08021
NJDOE STATE PROJECT #2670-040-19-1000



LIST OF DRAWINGS:

All Contractors shall examine all drawings indicated herein for required coordination between different trades and/or for work included in other sections of the Project Manual that may pertain to their respective contract.

CS	COVER SHEET
A100	DEMO & NEW WORK PLANS - BASE BID
A101	DEMO & NEW WORK PLANS - ALT-BID #1
A102	INTERIOR ELEVATIONS & DETAILS
A103	ROOF PLAN, ROOF DETAILS & MISC. DETAILS
A104	EGRESS PLAN & SIGNAGE DETAILS
MD100	PARTIAL FLOOR PLANS - MECHANICAL DEMOLITION
M100	PARTIAL FLOOR PLANS - MECHANICAL
M200	SCHEDULES & DETAILS - MECHANICAL
M300	HVAC SPECIFICATIONS - MECHANICAL
M301	PLUMBING SPECIFICATIONS - MECHANICAL
E100	PARTIAL FLOOR PLAN & SYMBOL LIST - ELECTRICAL
E101	PARTIAL FLOOR PLANS & SCHEDULE - LIGHTING
E102	PARTIAL PLANS & DIAGRAM - POWER
E200	SPECIFICATIONS - ELECTRICAL

SUBCODES

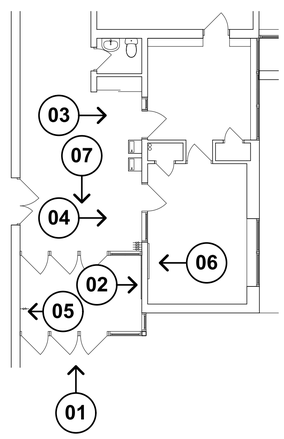
THE FOLLOWING SUBCODES AS ADOPTED BY THE NEW JERSEY UNIFORM CONSTRUCTION CODE (NJAC 5:23 et seq.) SHALL APPLY TO THIS PROJECT.

SUBCODE	NATIONAL MODEL CODE	UCC REFERENCE
BUILDING	INTERNATIONAL BUILDING CODE NJ ED/2018	NJAC 5:23-3.14
PLUMBING	NATIONAL PLUMBING CODE /2018	NJAC 5:23-3.15
ELECTRICAL	NATIONAL ELECTRICAL CODE /2017	NJAC 5:23-3.16
ENERGY	ASHRAE 90.1-2016	NJAC 5:23-3.18
MECHANICAL	INTERNATIONAL MECHANICAL CODE /2018	NJAC 5:23-3.20
FUEL GAS	INTERNATIONAL FUEL GAS CODE /2018	NJAC 5:23-3.22
REHABILITATION	REHABILITATION SUBCODE RENOVATION 6.5 AND ALTERATION 6.6	NJAC 5:23-6
BARRIER FREE	ICC/ANSI A117.1-2009	NJAC 5:23-7

CONSTRUCTION TYPE: IIB
USE GROUP: E

GENERAL NOTE:

FOLLOW APPENDIX DOCUMENTS FOR ASBESTOS ABATEMENT REQUIREMENTS



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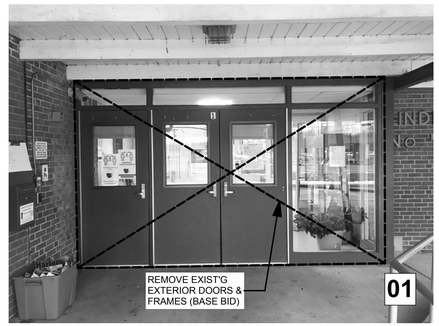

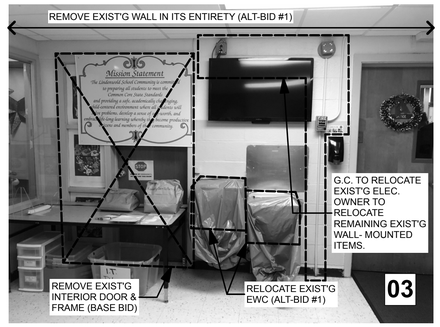

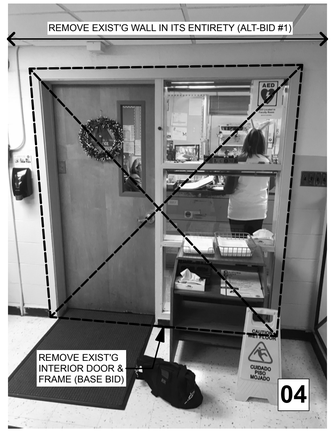

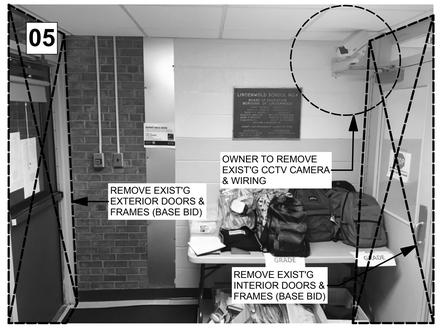

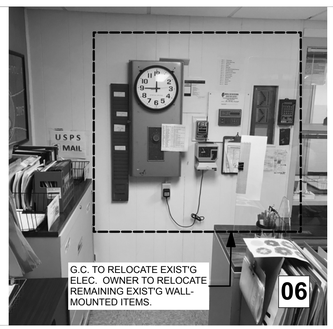

EXIST'G CONDITIONS PHOTOS

OWNER:
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MPE ENGINEER:
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PRINT DATE: 3/12/21

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NJDOE SP #2670-040-19-1000

BUILDING ENTRANCES
SECURITY ENHANCEMENT
LINDENWOLD SCHOOL 4
900 EAST GIBBSBORO ROAD
LINDENWOLD, NJ 08021

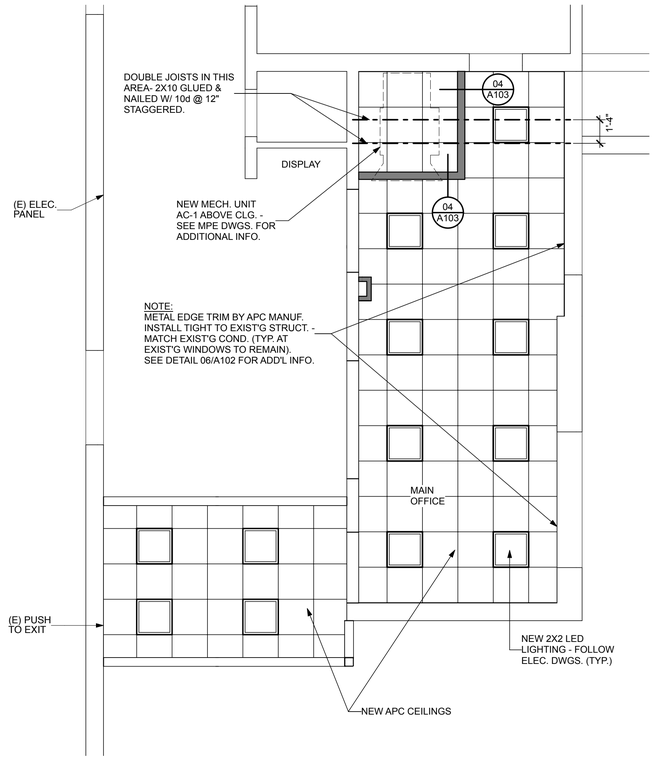
TITLE: COVER SHEET

DRAWING DATE: 26 FEB 2021
REVISION DATE:
DRAWN BY: PF
COMMISSION NO.: 5643A

SCHOOL 4

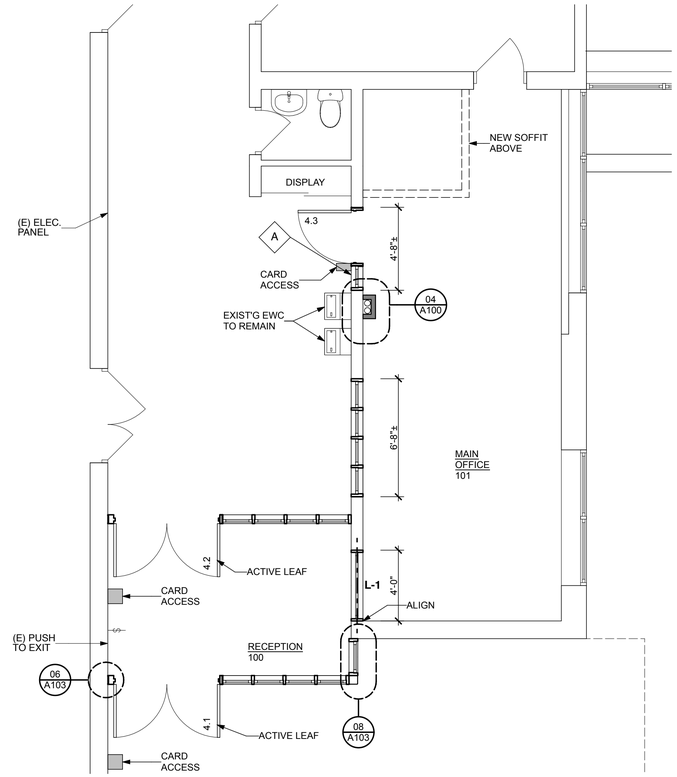
CS

1 OF 6



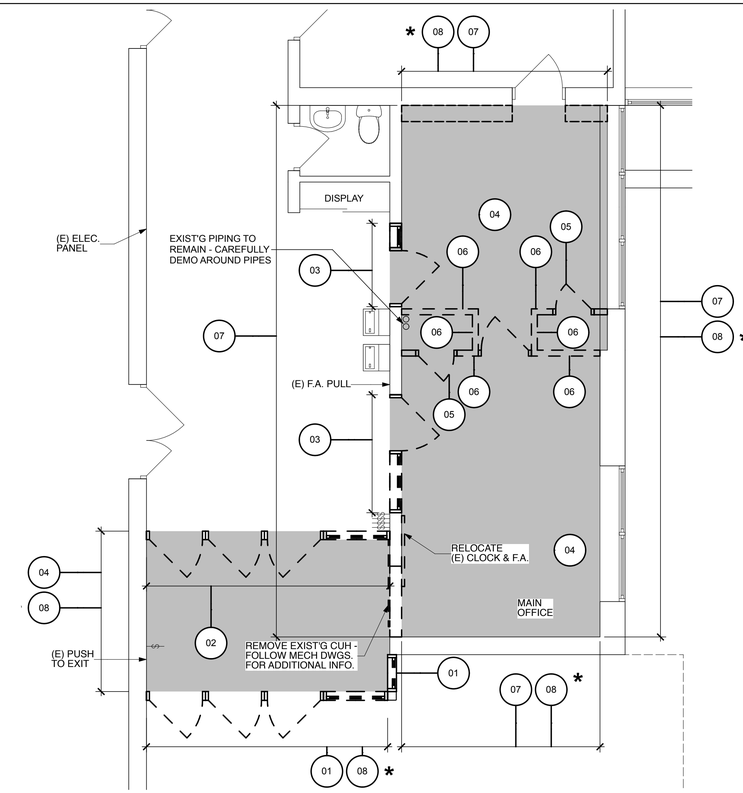
SCHOOL 4 REFL. CLG.
SCALE: 1/2" = 1'-0" | 03 | A100

BASE BID



SCHOOL 4 NEW WORK
SCALE: 1/4" = 1'-0" | 02 | A100

BASE BID



SCHOOL 4 DEMO
SCALE: 1/4" = 1'-0" | 01 | A100

BASE BID

ROOM FINISH SCHEDULE - LINDENWOLD SCHOOL #4 - BASE BID

RM #	ROOM NAME	FLR	BASE	WALLS				CLG	CLG. HT.	REMARKS
				NORTH	EAST	SOUTH	WEST			
100	RECEPTION	RTT	RUB	PTD	PTD	PTD	PTD	APC-1	MATCH	
101	MAIN OFFICE	LVCT	RUB	PTD	PTD	PTD	PTD	APC-1	MATCH	

FINISH SCHEDULE KEY

APC-# Acoustical Panel Ceiling. Refer to Section 09511 - Acoustical Panel Ceilings for panel types.
PTD Paint
RTT Resilient Terrazzo Tile
LVCT Vinyl Composite Tile
MATCH Match Existing Ceiling Heights

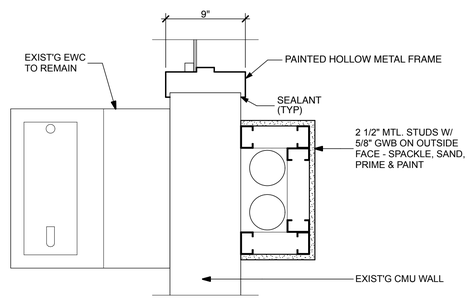
DOOR SCHEDULE - SCHOOL 4 (BASE BID)

DOOR NUMBER	DOOR TYPE	DOOR WIDE	DOOR HEIGHT	DOOR THICKNESS	DOOR MATERIAL	DOOR GLAZG TYPE	FRAME TYPE	FRAME WIDE	FRAME HEIGHT	FRAME MATERIAL	FRAME GLAZG TYPE	RAT'G (MIN)	THRESHOLD	HDW SET	REMARKS
4.1	D-1	(2) 3'-0"	7'-0"	1 3/4"	AL	IGU-2	F-1	13'-8"	8'-3"	AL	IGU-1	N/A	X	1.0	(1)
4.2	D-1	(2) 3'-0"	7'-0"	1 3/4"	AL	IGU-2	F-2	13'-8"	7'-2"	AL	G-1	N/A	X	4.0	(1)
4.3	D-2	3'-0"	7'-0"	1 3/4"	WD	G-2	F-3	4'-8"	7'-2"	PHM	G-2	20	N/A	8.0	(1)

KEY:

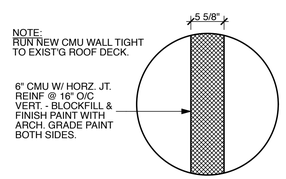
AL Aluminum
WD Wood
PHM Painted Hollow Metal
G-1 Interior Storefront Vision Glazing
G-2 Fire Rated Safety Glass (No wire glass permitted)
IGU-1 Exterior Storefront Vision Glazing
IGU-2 Aluminum Door Vision Glazing
N/A Not Applicable

NOTES:
(1) Verify opening dimensions in field.



PIPE ENCLOSURE DTL.
SCALE: 1 1/2" = 1'-0" | 04 | A100

BASE BID



WALL TYPE W1

WALL TYPES
SCALE: 1" = 1'-0" | 05 | A101

DEMO NOTES:

- — — — — EXISTING TO BE REMOVED

01 REMOVE EXIST'G EXTERIOR VESTIBULE DOORS & FRAMING SYSTEM. PREPARE OPENING FOR NEW DOORS & STOREFRONT.

02 REMOVE EXIST'G INTERIOR VESTIBULE DOORS & FRAMING SYSTEM. PREPARE OPENING FOR NEW DOORS & STOREFRONT.

03 REMOVE EXIST'G INTERIOR WINDOWS, DOORS & FRAMING SYSTEMS. PREPARE OPENING FOR NEW DOORS & FRAMES.

04 REMOVE EXIST'G APC & ALL SUPPORTING ELEMENTS IN THEIR ENTIRETY. RE-SUPPORT SPEAKERS, F.A. & ALL OTHER CEILING-MOUNTED DEVICES UNTIL NEW CEILING SYSTEM IS INSTALLED. ALL EXISTING DEVICES MUST REMAIN FUNCTIONAL AT ALL TIMES. SEE MPE DWGS. FOR ADD'L INFO.

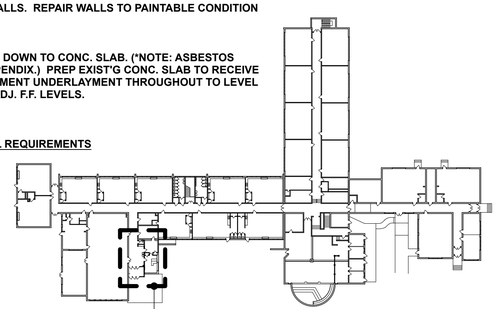
05 REMOVE EXIST'G DOOR & FRAME

06 REMOVE EXIST'G WALL

07 REMOVE ALL WOOD PANELING OFF WALLS. REPAIR WALLS TO PAINTABLE CONDITION AND PRIME & PAINT (TYP.)

* 08 REMOVE EXIST'G FLOORING & MASTIC DOWN TO CONC. SLAB. (*NOTE: ASBESTOS ABATEMENT REQUIRED - FOLLOW APPENDIX.) PREP EXIST'G CONC. SLAB TO RECEIVE NEW FLOORING. INSTALL GYPSUM CEMENT UNDERLAYMENT THROUGHOUT TO LEVEL SLAB & BRING FLOORING TO MATCH ADJ. F.F. LEVELS.

NOTE: FOLLOW MPE DWGS. FOR ADDITIONAL REQUIREMENTS



AREA OF WORK

NOTE:

CARD ACCESS SYSTEM SUPPLIED & INSTALLED BY OWNER'S IT VENDOR - G.C. TO FULLY COORDINATE INSTALL WITH IT VENDOR (TYP.)

KEY PLAN NTS

PRINT DATE: 3/12/21

REGAN YOUNG, AIA
21AI00912100

REGAN YOUNG ENGLAND BUTERA
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+1(609)265-2652/4333FAX - 21AI00912100 - RYEBREAD.COM

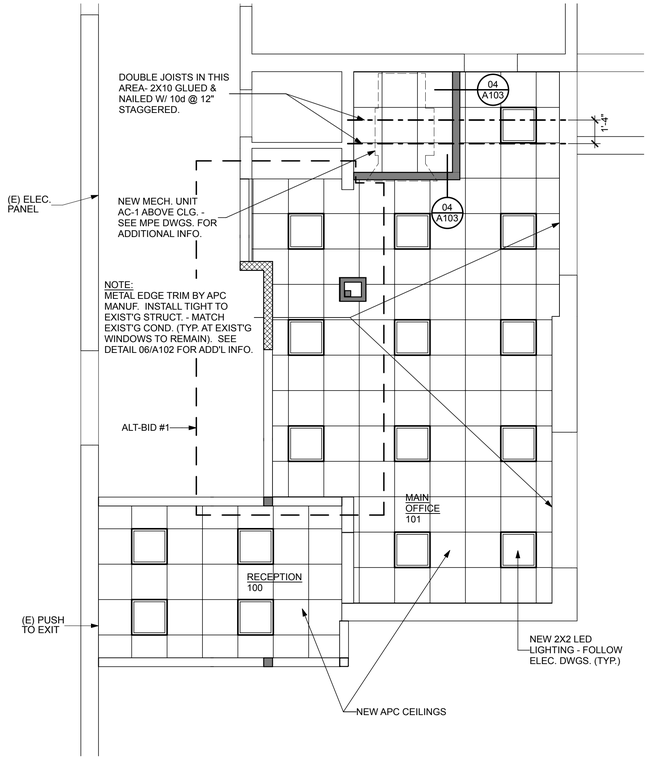
NJDOE SP #2670-040-19-1000

BUILDING ENTRANCES
SECURITY ENHANCEMENT
LINDENWOLD SCHOOL 4
900 EAST GIBBSBORO ROAD
LINDENWOLD, NJ 08021

TITLE: DEMO & NEW WORK PLANS - BASE BID

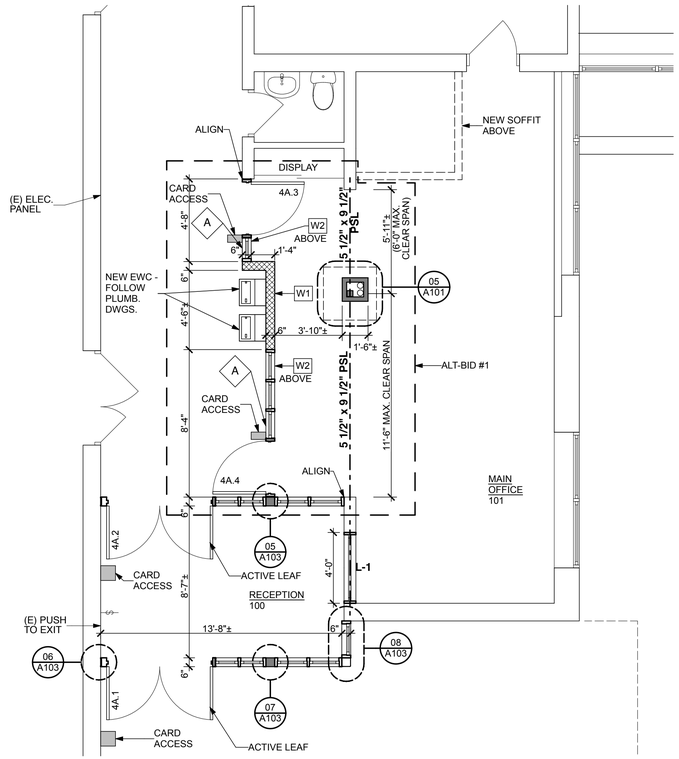
DRAWING DATE: 26 FEB 2021
REVISION DATE:
DRAWN BY: PF
COMMISSION NO.: 5643A

SCHOOL 4
A100
2 OF 6



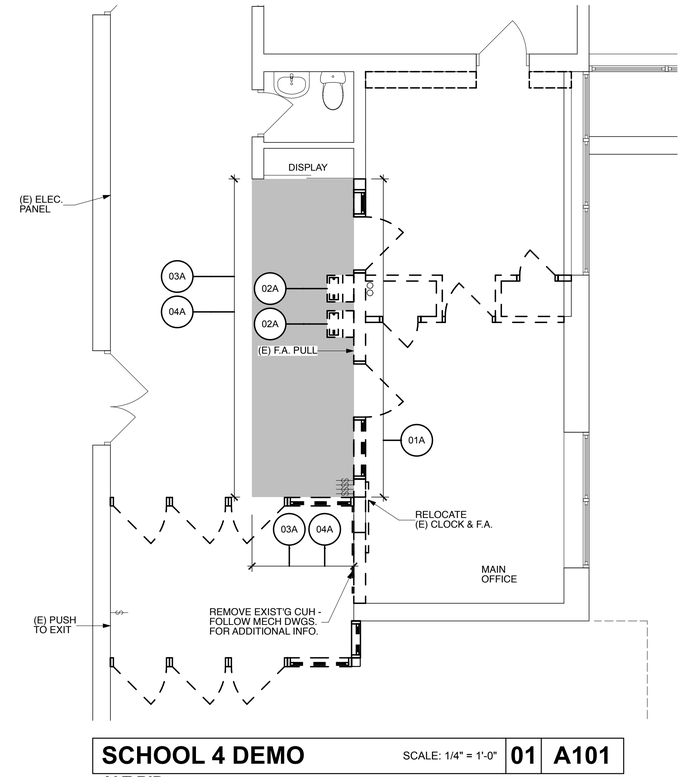
SCHOOL 4 REFL. CLG. — SCALE: 1/4" = 1'-0" — 03 A101

ALT BID



SCHOOL 4 NEW WORK — SCALE: 1/4" = 1'-0" — 02 A101

ALT BID



SCHOOL 4 DEMO — SCALE: 1/4" = 1'-0" — 01 A101

ALT BID

ALT-BID DEMO NOTES:

ALL WORK SHOWN IS IN ADDITION TO BASE BID WORK

— — — — EXISTING TO BE REMOVED

01A — REMOVE EXIST'G INTERIOR WALL IN ITS ENTIRETY. TEMPORARILY SUPPORT ROOF STRUCTURE ABOVE BEFORE NEW STRUCTURAL SUPPORT IS INSTALLED.

02A — REMOVE & REPLACE EXIST'G DRINKING FOUNTAINS

03A — REMOVE EXIST'G APC & ALL SUPPORTING ELEMENTS IN THEIR ENTIRETY. RE-SUPPORT SPEAKERS, F.A. & ALL OTHER CEILING- MOUNTED DEVICES UNTIL NEW CEILING SYSTEM IS INSTALLED. ALL EXISTING DEVICES MUST REMAIN FUNCTIONAL AT ALL TIMES. SEE MPE DWGS. FOR ADD'L INFO.

* 04A — REMOVE EXIST'G FLOORING & MASTIC DOWN TO CONC. SLAB. (*NOTE: ASBESTOS ABATEMENT REQUIRED - FOLLOW APPENDIX.) PREP EXIST'G CONC. SLAB TO RECEIVE NEW FLOORING.

NOTE: FOLLOW MPE DWGS. FOR ADDITIONAL REQUIREMENTS

DOOR SCHEDULE - SCHOOL 4 (ALT BID #1)

NUMBER	DOOR TYPE	DOOR WIDE	DOOR HEIGHT	DOOR THICKNESS	DOOR MATERIAL	DOOR GLAZG TYPE	FRAME TYPE	FRAME WIDE	FRAME HEIGHT	FRAME MATERIAL	FRAME GLAZG TYPE	RAT'G (MIN)	THRESHOLD	HDW SET	REMARKS
4A.1	D-1	(2) 3'-0"	7'-0"	1 3/4"	AL	IGU-2	F-1ALT	13'-8"	8'-3"	AL	IGU-1	N/A	X	1.0	(1), (2)
4A.2	D-1	(2) 3'-0"	7'-0"	1 3/4"	AL	IGU-2	F-2ALT	13'-8"	7'-2"	AL	G-1	N/A	X	4.0	(1), (2)
4A.3	D-2	3'-0"	7'-0"	1 3/4"	WD	G-2	F-3	4'-8"	7'-2"	PHM	G-2	20	N/A	7.0	
4A.4	D-2	3'-0"	7'-0"	1 3/4"	WD	G-2	F-3ALT	8'-4"	7'-2"	PHM	G-2	20	N/A	8.0	

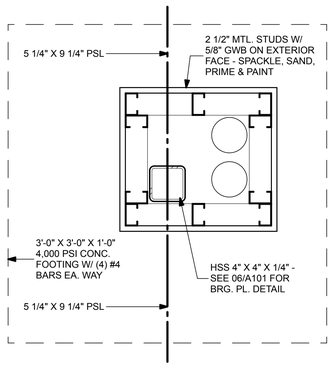
KEY:

AL	Aluminum
WD	Wood
PHM	Painted Hollow Metal
G-1	Interior Storefront Vision Glazing
G-2	Fire Rated Safety Glass (No wire glass permitted)
IGU-1	Exterior Storefront Vision Glazing
IGU-2	Aluminum Door Vision Glazing
N/A	Not Applicable

NOTES:

(1) Verify opening dimensions in field.

(2) Provide alumuminum column by storefront manufacturer.

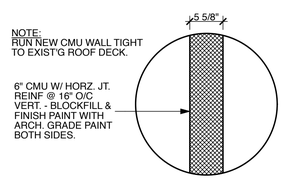


INT. COLUMN DTL. — SCALE: 1 1/2" = 1'-0" — 05 A101

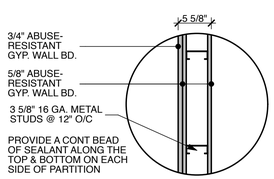
ALT BID

NOTE:

CARD ACCESS SYSTEM SUPPLIED & INSTALLED BY OWNER'S IT VENDOR - G.C. TO FULLY COORDINATE INSTALL WITH IT VENDOR (TYP.)



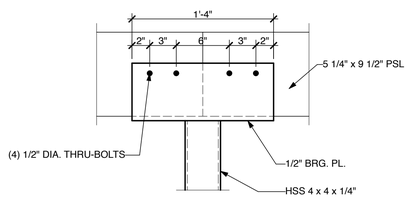
WALL TYPE W1



WALL TYPE W2

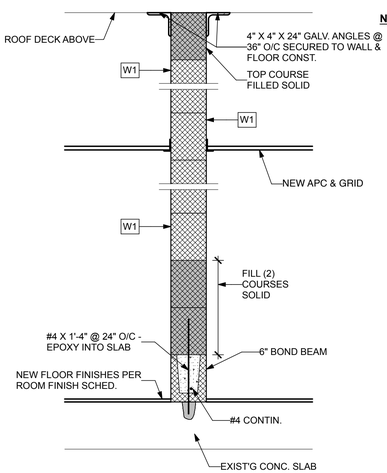
NOTE:
1. RUN NEW MTL. STUD PARTITION TIGHT TO UNDERSIDE OF ROOF DECK.

WALL TYPES — SCALE: 1" = 1'-0" — 07 A101



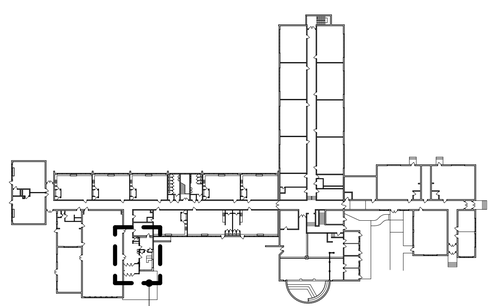
COLUMN BRG. DTL. — SCALE: 1 1/2" = 1'-0" — 06 A101

ALT BID



WALL SECTION — SCALE: 1" = 1'-0" — 04 A101

ALT BID



AREA OF WORK

KEY PLAN — NTS

PRINT DATE: 3/12/21

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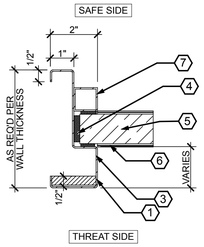
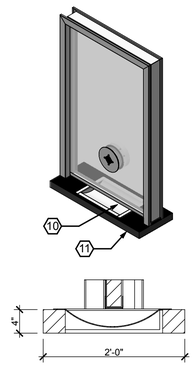
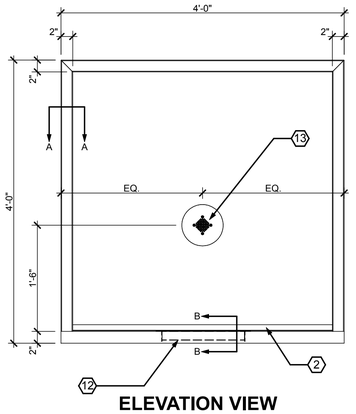
SCHOOL 4
A101



SECTION A-A



SECTION B-B



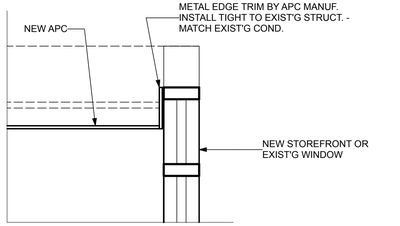
ELEVATION VIEW

NOTES:

1. BULLET RESISTANT ARMOR
2. STAINLESS STEEL GLAZING CAPS
3. 16 GA. FIELD-PRIMED & PAINTED STEEL FRAME
4. NEOPRENE SETTING BLOCKS
5. BULLET RESISTANT GLAZING
6. GLAZING TAPE
7. REMOVABLE STOP 1" X 1"
8. ANCHOR HOLES AS REQUIRED PER MANUF. (NOT SHOWN)
9. ANCHORS AS REQUIRED PER MANUF. (NOT SHOWN)
10. STAINLESS STEEL DEAL TRAY
11. STAINLESS STEEL SHELF
12. STAINLESS STEEL CAP
13. SPEAKER

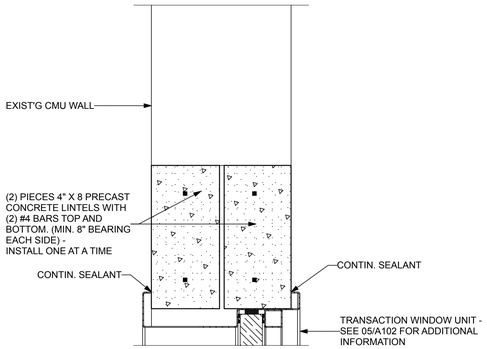
TRANSACTION WINDOW DETAILS

SCALE: NTS | 05 | A102



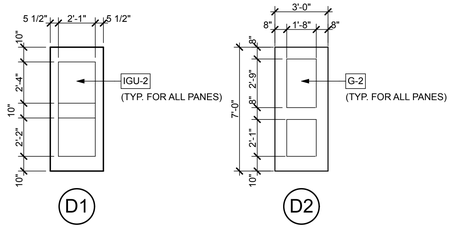
APC DETAIL

SCALE: 1" = 1'-0" | 06 | A102

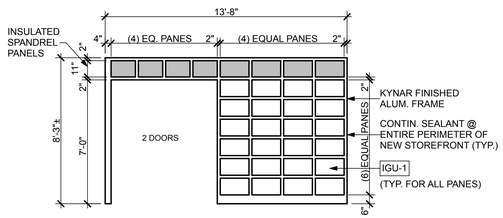


LINTEL L-1

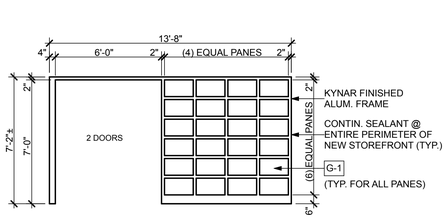
SCALE: 1/2" = 1'-0" | 07 | A102



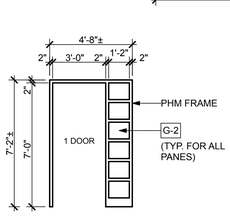
D1 D2



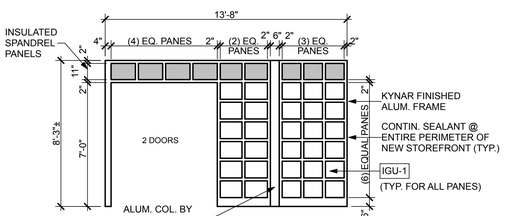
F1



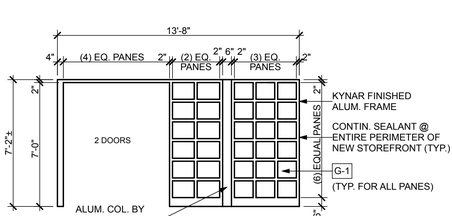
F2



F3



F1ALT **ALT-BID #1**



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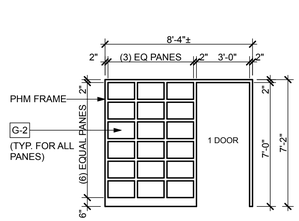
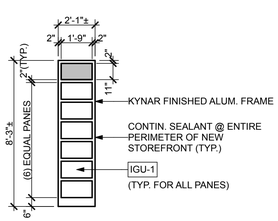


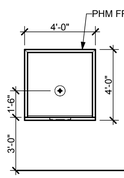
F3ALT **ALT-BID #1**



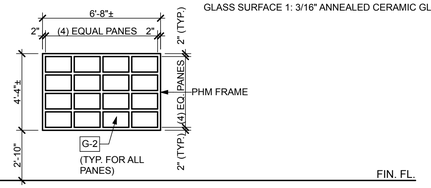
F4

DOOR/FRAME TYPES

SCALE: 1/4" = 1'-0" | 03 | A102



W1



W2 **ALT-BID #1**

WINDOW TYPES

SCALE: 1/4" = 1'-0" | 04 | A102

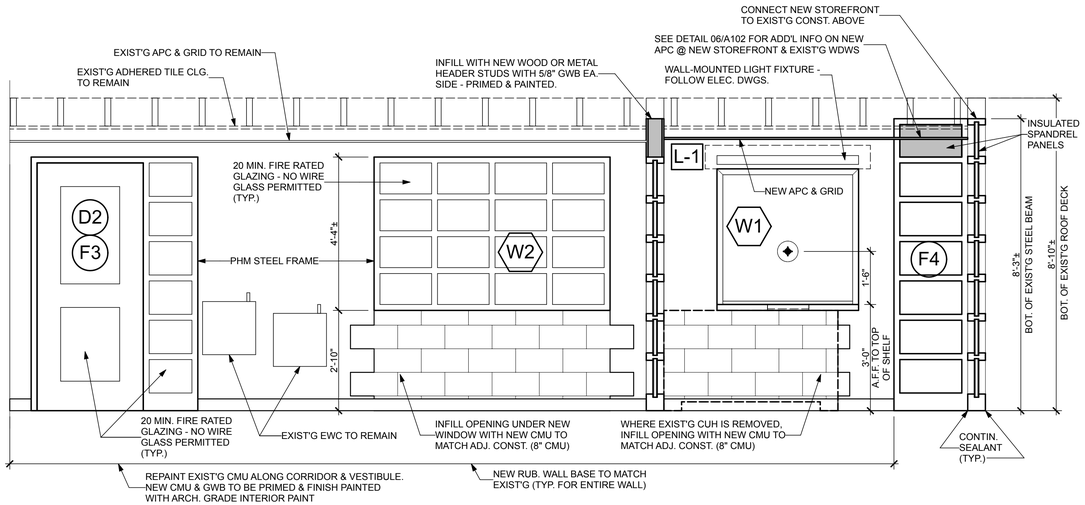
GLAZING TYPES:

IGU-1 EXTERIOR STOREFRONT VISION GLASS TYPE:
OVERALL UNIT THICKNESS: 1 5/16"
OUTBOARD LITE: 1/4" CLEAR TEMPERED W/ PPG "SB60" LOW E @ #2
AIR SPACE: 1/2" WARM EDGE SPACER
INBOARD LITE: 9/16" CLEAR LAMINATED GLASS WITH DUPONT SENTRYGLAS INTERLAYER
1/4" CLEAR ANNEALED
0.090" DUPONT SENTRYGLAS INTERLAYER
1/4" CLEAR ANNEALED

IGU-2 ALUMINUM DOORS:
OVERALL UNIT THICKNESS: 1-1/16"
OUTBOARD LITE: 3/16" CLEAR TEMPERED W/ PPG "SB60" LOW E @ #2
AIR SPACE: 1/2" WARM EDGE SPACER
INBOARD LITE: 5/16" CLEAR LAMINATED GLASS WITH DUPONT SENTRYGLAS INTERLAYER
1/8" CLEAR ANNEALED
0.090" DUPONT SENTRYGLAS INTERLAYER
1/8" CLEAR ANNEALED

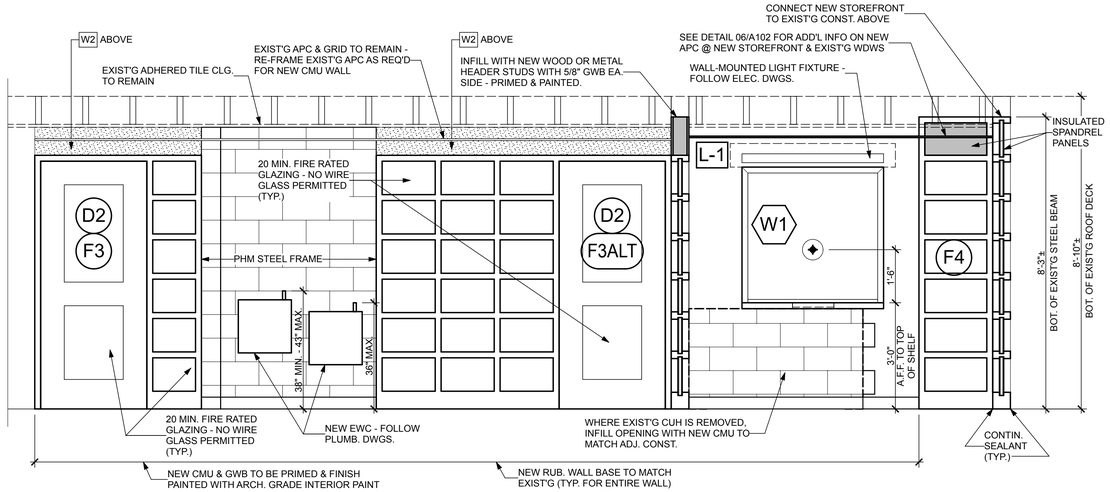
G-1 INTERIOR STOREFRONT VISION GLAZING:
OVERALL UNIT THICKNESS: 9/16"
GLASS SURFACE 1: 1/4" ANNEALED
INTERLAYER: 0.090" DUPONT SENTRYGLAS INTERLAYER
GLASS SURFACE 2: 1/4" CLEAR ANNEALED

G-2 INTERIOR FIRE-RATED VISION GLAZING:
OVERALL UNIT THICKNESS: 5/16"
GLASS SURFACE 1: 3/16" ANNEALED CERAMIC GLASS
INTERLAYER: 0.030" DUPONT SENTRYGLAS INTERLAYER
GLASS SURFACE 1: 3/16" ANNEALED CERAMIC GLASS



INTERIOR ELEVATION - BASE BID

SCALE: 1/2" = 1'-0" | 01 | A102



INTERIOR ELEVATION - ALT-BID #1

SCALE: 1/2" = 1'-0" | 02 | A102

PRINT DATE: 3/12/21

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NJDOE SP #2670-040-19-1000

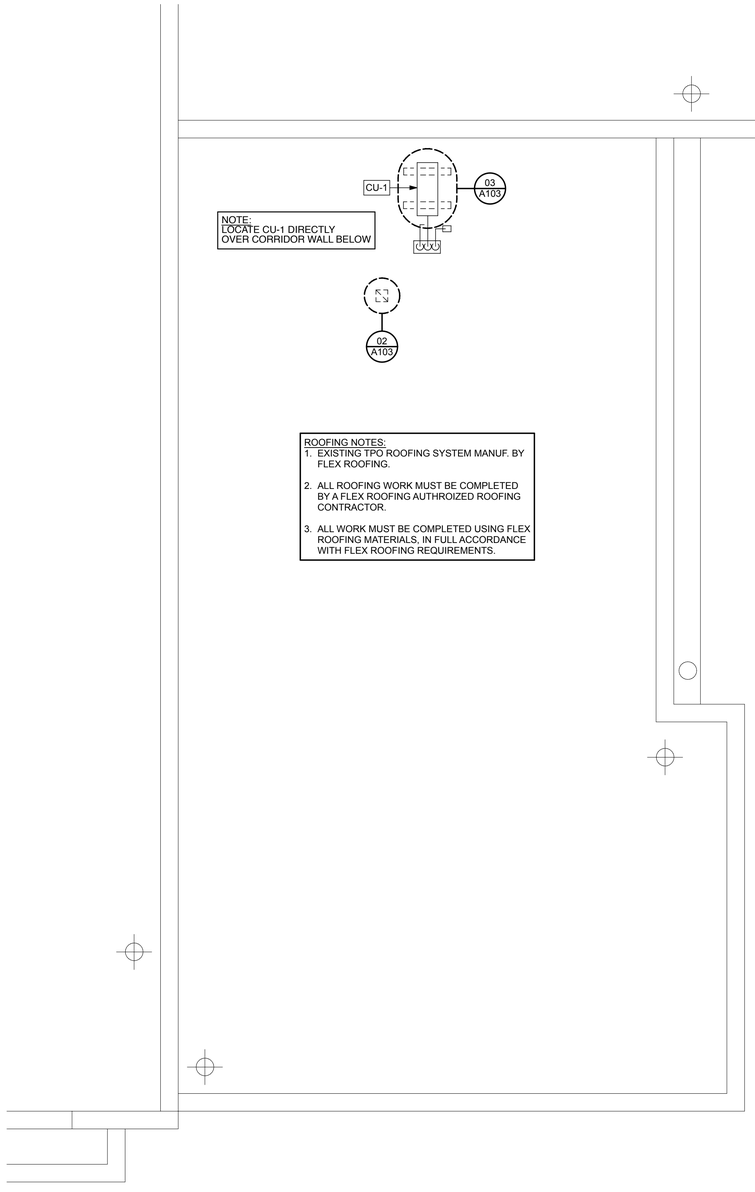
BUILDING ENTRANCES
SECURITY ENHANCEMENT
LINDENWOLD SCHOOL 4
900 EAST GIBBSBORO ROAD
LINDENWOLD, NJ 08021

TITLE: INTERIOR ELEVATIONS & DETAILS

DRAWING DATE:
26 FEB 2021
REVISION DATE:
DRAWN BY:
PF
COMMISSION NO.:
5643A

SCHOOL 4

A102

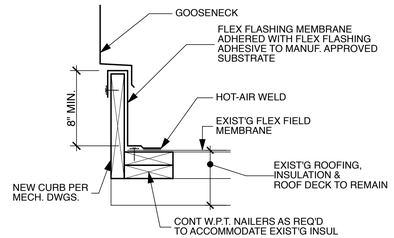


NOTE:
LOCATE CU-1 DIRECTLY OVER CORRIDOR WALL BELOW

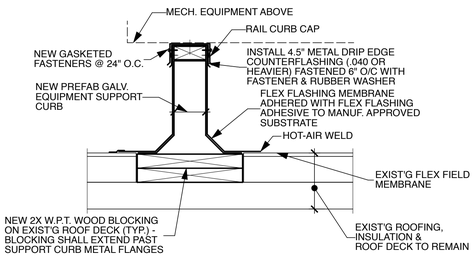
ROOFING NOTES:
1. EXISTING TPO ROOFING SYSTEM MANUF. BY FLEX ROOFING.
2. ALL ROOFING WORK MUST BE COMPLETED BY A FLEX ROOFING AUTHROIZED ROOFING CONTRACTOR.
3. ALL WORK MUST BE COMPLETED USING FLEX ROOFING MATERIALS, IN FULL ACCORDANCE WITH FLEX ROOFING REQUIREMENTS.

PARTIAL ROOF PLAN
SCALE: 1/4" = 1'-0" | 01 | A103

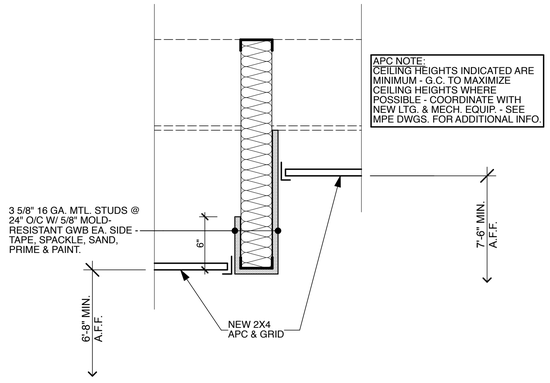
NOTE:
FOLLOW FLEX MEMBRANE INTERNATIONAL REQM'TS FOR PVC MEMBRANE FOR ALL ROOFING WORK.



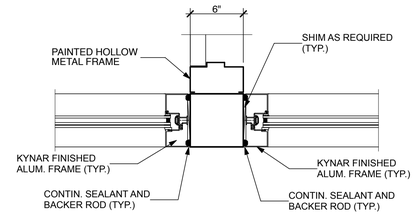
TYP. CURB FLASHING DTL.
NTS | 02 | A103



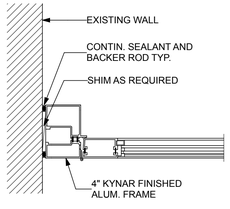
TYP. EQUIPMENT CURB DTL.
NTS | 03 | A103



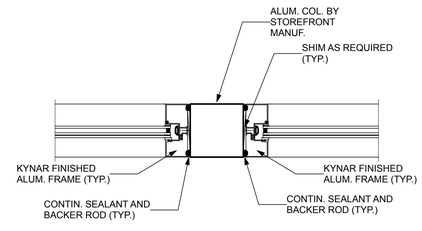
SOFFIT DETAIL
SCALE: 1 1/2" = 1'-0" | 04 | A103



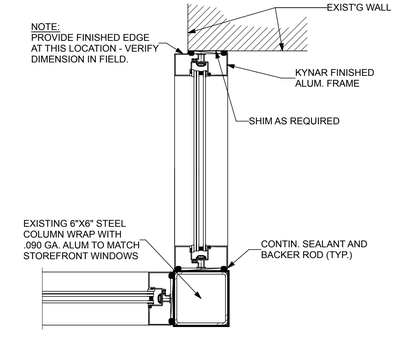
PLAN DETAIL
SCALE: 1 1/2" = 1'-0" | 05 | A103



PLAN DETAIL
SCALE: 1 1/2" = 1'-0" | 06 | A103



PLAN DETAIL
SCALE: 1 1/2" = 1'-0" | 07 | A103



PLAN DETAIL
SCALE: 1 1/2" = 1'-0" | 08 | A103

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PRINT DATE: 3/12/21

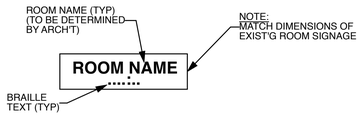
NJDOE SP #2670-040-19-1000

BUILDING ENTRANCES
SECURITY ENHANCEMENT
LINDENWOLD SCHOOL 4
900 EAST GIBBSBORO ROAD
LINDENWOLD, NJ 08021

TITLE: ROOF PLAN, ROOF DTLS. & MISC. DTLS.

DRAWING DATE: 26 FEB 2021
REVISION DATE:
DRAWN BY: PF
COMMISSION NO.: 5643A

SCHOOL 4
A103
5 OF 6



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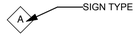


SIGN TYPE SYMBOL

SIGNAGE MOUTED ON GLASS:

SIGNAGE REQUIRED TO BE MOUNTED TO GLASS SHALL HAVE A BLANK BACK PANEL MADE OF THE SAME MATERIAL AND OF THE SAME SIZE AND COLOR AS THE SIGN ADHERED TO THE OPPOSITE SIDE OF THE GLASS.

MOUNTING LOCATION AND HEIGHT:

WHERE PERMANENT IDENTIFICATION WITH TACTILE CHARACTERS IS PROVIDED FOR ROOMS AND SPACES, SIGNS SHALL BE INSTALLED ON THE WALL ADJACENT TO THE LATCH SIDE OF THE DOOR. AT DOUBLE LEAF DOORS, THE SIGN SHALL BE TO THE RIGHT OF THE RIGHT-HAND DOOR. WHERE THERE IS NO WALL SPACE ON THE LATCH SIDE OF A SINGLE DOOR, OR THE RIGHT SIDE OF DOUBLE DOORS, SIGNS SHALL BE ON THE NEAREST ADJACENT WALL. SIGNS SHALL HAVE AN 18-INCH MINIMUM SPACE ON THE FLOOR OR GROUND, CENTERED ON THE SIGN, BEYOND THE ARC OF ANY DOOR SWING BETWEEN THE CLOSED POSITION AND 45 DEGREE OPEN POSITION. WHERE SIGNS ARE INDICATED TO BE MOUNTED ON A WINDOW OR SIDELITE, A BLANK BACKER PANEL OF THE SAME SIZE AND COLOR AS THE SIGN SHALL BE PROVIDE ON THE OPPOSITE SIDE OF THE GLASS. MOUNTING HEIGHTS SHALL BE AS FOLLOWS:

60-INCHES MAXIMUM TO 48-INCHES MINIMUM ABOVE FINISH FLOOR TO THE BASELINE OF THE CHARACTERS. (Standard)

MAXIMUM OF 48-INCHES ABOVE FINISH FLOOR TO CENTERLINE OF SIGN. (NJ Children)

RAISED AND BRAILLED CHARACTERS AND PICTORIAL SYMBOL SIGNS:

LETTERS AND NUMERALS SHALL BE RAISED 1/32-INCH, UPPER CASE, SANS SERIF OR SIMPLE SERIF TYPE AND SHALL BE ACCOMPANIED WITH GRADE 2 BRAILLE. RAISED CHARACTERS SHALL BE AT LEAST 5/8-INCH HIGH, BUT NO HIGHER THAN 2-INCHES. PICTOGRAMS SHALL BE ACCOMPANIED BY THE EQUIVALENT VERBAL DESCRIPTION PLACED DIRECTLY BELOW THE PICTOGRAM. THE BORDER DIMENSION OF THE PICTOGRAM SHALL BE 6-INCHES MINIMUM IN HEIGHT. REFER TO TABLE 703.2.4 & 703.4.3 IN ANSI A117.1-2009 FOR REQUIRED CHARACTER AND BRAILLE DIMENSIONS.

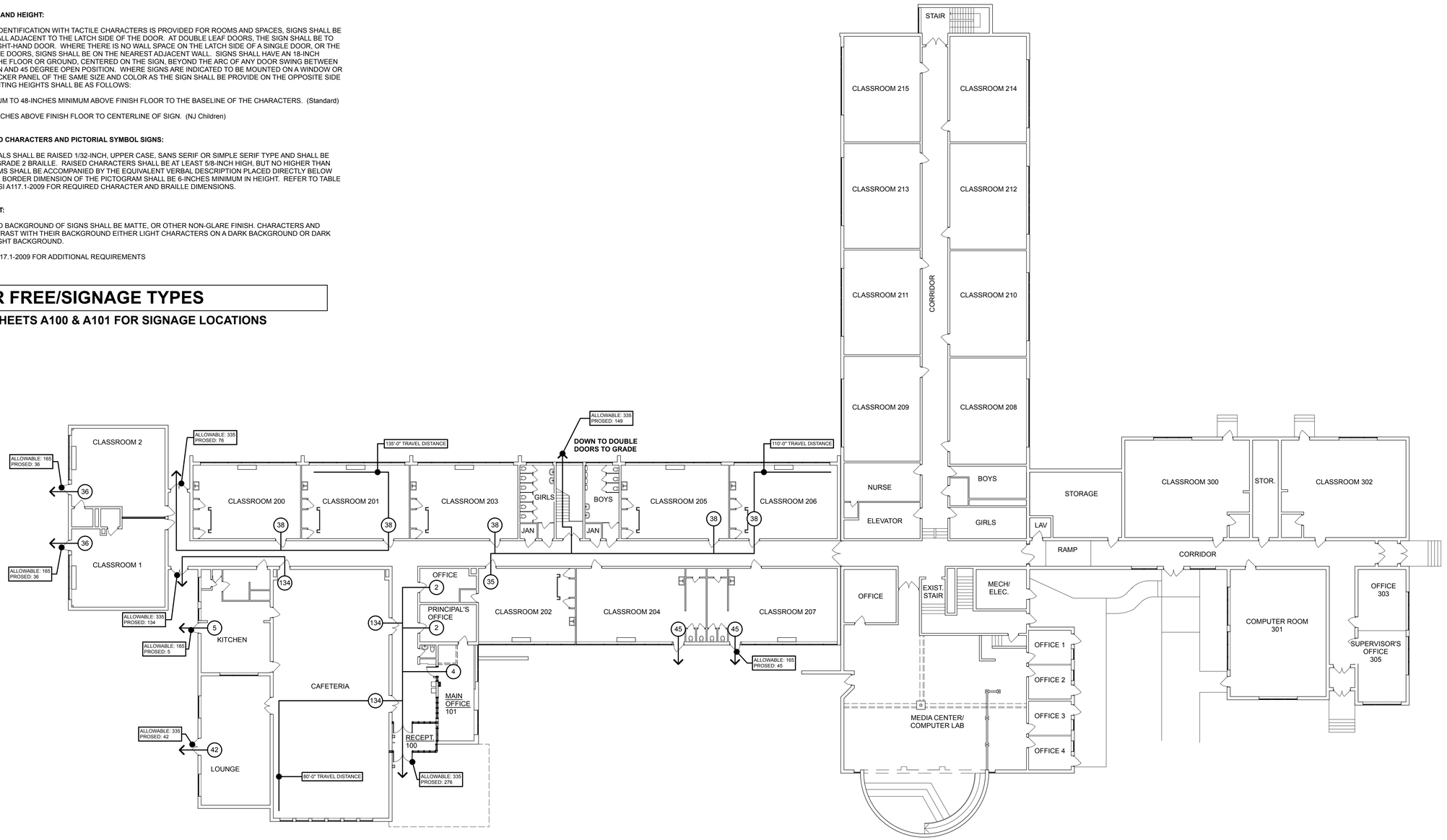
FINISH AND CONTRAST:

THE CHARACTERS AND BACKGROUND OF SIGNS SHALL BE MATTE, OR OTHER NON-GLARE FINISH. CHARACTERS AND SYMBOLS SHALLCONTRAST WITH THEIR BACKGROUND EITHER LIGHT CHARACTERS ON A DARK BACKGROUND OR DARK CHARACTERS ON A LIGHT BACKGROUND.

REFER TO ICC/ANSI A117.1-2009 FOR ADDITIONAL REQUIREMENTS

BARRIER FREE/SIGNAGE TYPES

NOTE: SEE SHEETS A100 & A101 FOR SIGNAGE LOCATIONS



EGRESS PLAN SCALE: 14" = 1'-0" | **01** | **A104**

PRINT DATE: 3/12/21

REGAN YOUNG, AIA
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NJDOE SP #2670-040-19-1000

BUILDING ENTRANCES
SECURITY ENHANCEMENT
LINDENWOLD SCHOOL 4
900 EAST GIBBSBORO ROAD
LINDENWOLD, NJ 08021

TITLE: **EGRESS PLAN & SIGNAGE DETAILS**

DRAWING DATE:	26 FEB 2021
REVISION DATE:	
DRAWN BY:	PF
COMMISSION NO.:	5643A

SCHOOL 4

A104

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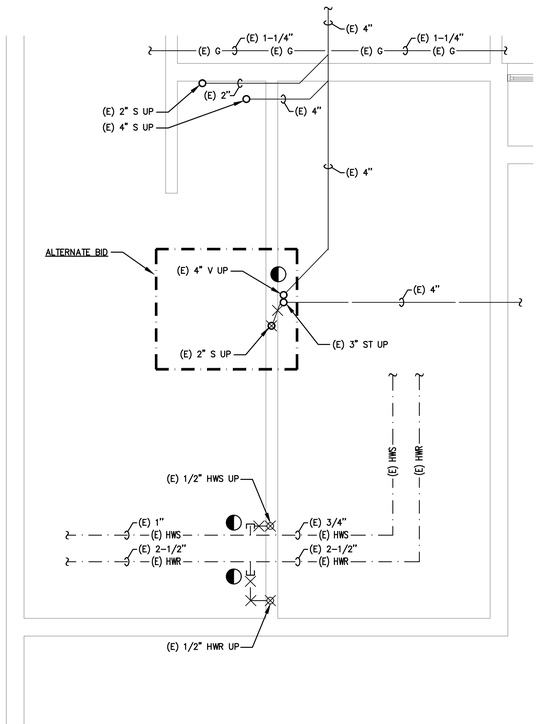
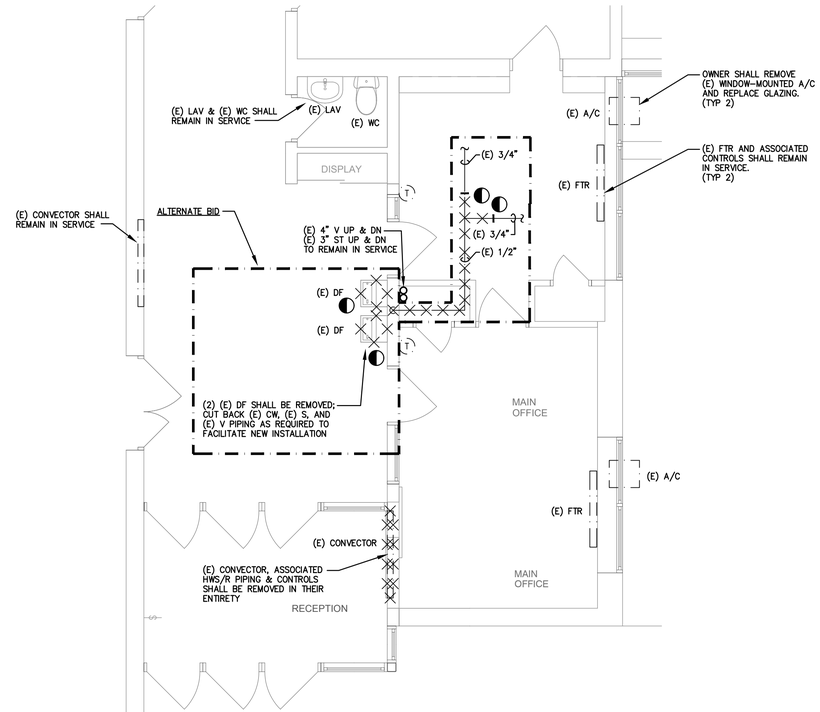


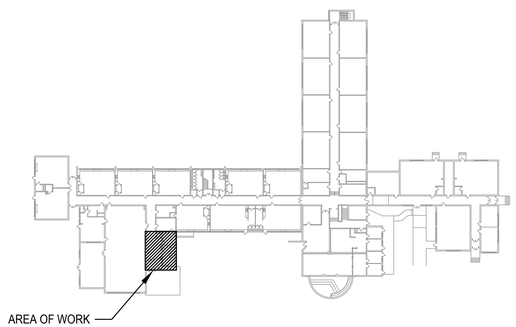
1 MD100 PARTIAL BASEMENT PLAN – MECHANICAL DEMOLITION

SCALE 1/4" = 1'-0"



2 MD100 PARTIAL FIRST FLOOR PLAN – MECHANICAL DEMOLITION

SCALE 1/4" = 1'-0"



KEY PLAN NTS

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NJ 38656

PRINT DATE: 1/8/21

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TITLE: PARTIAL FLOOR PLANS - MECHANICAL DEMOLITION

DRAWING DATE: 26 FEB 2021
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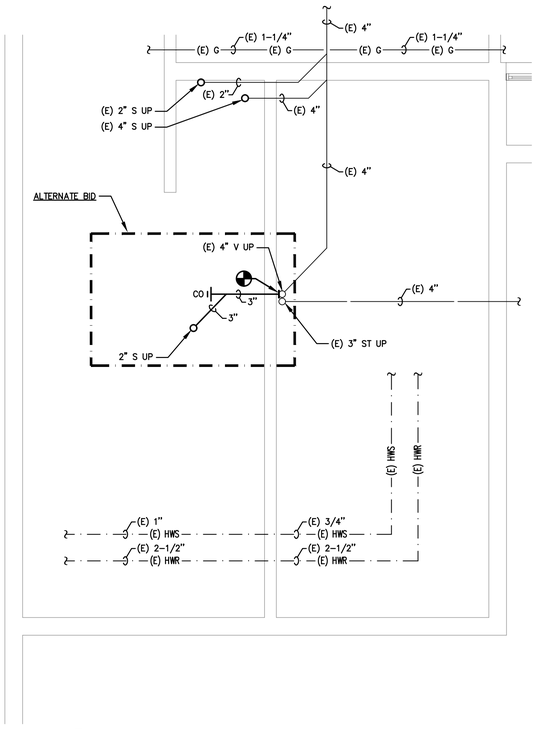
COMMISSION NO.: **5643A**

SCHOOL 4

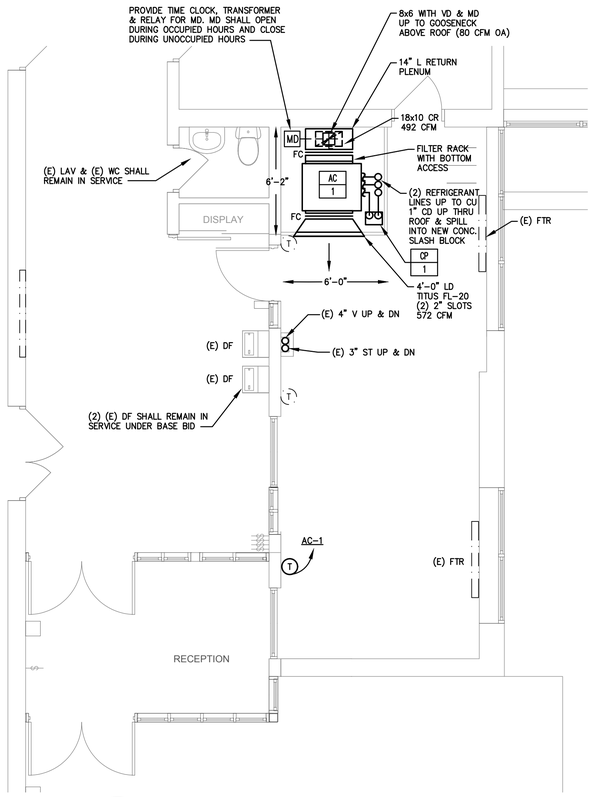
MD100

1 OF 5



1 M100 PARTIAL BASEMENT PLAN – MECHANICAL (ALTERNATE BID)

SCALE 1/4" = 1'-0"

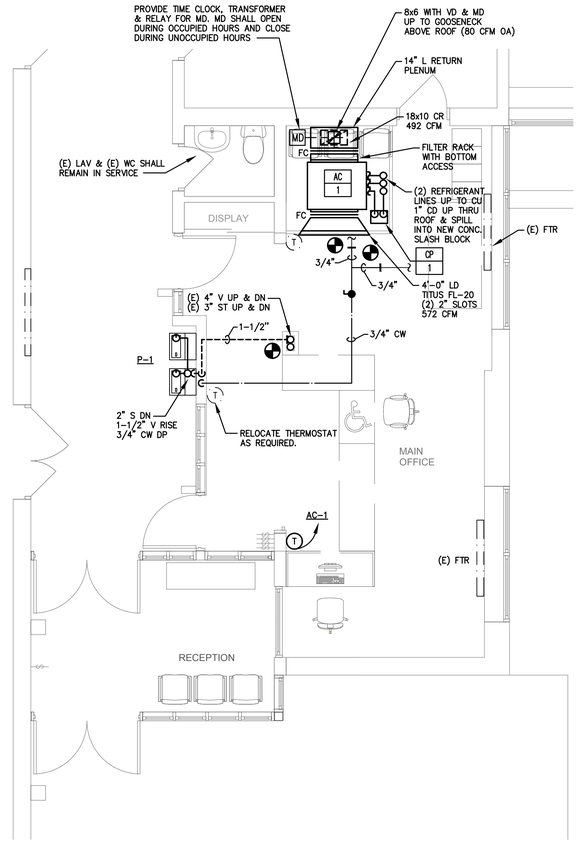


2 M100 PARTIAL FIRST FLOOR PLAN – MECHANICAL (BASE BID)

SCALE 1/4" = 1'-0"

NOTES:

1. FOR THE LINEAR DIFFUSER, PROVIDE JETTHROW PATTERN CONTROLLER, 48"x 9.1875" DUCT CONNECTION, AND BORDER 11.

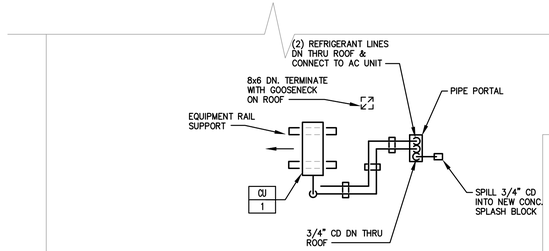


3 M100 PARTIAL FIRST FLOOR PLAN – MECHANICAL (ALTERNATE BID)

SCALE 1/4" = 1'-0"

NOTES:

1. FOR THE LINEAR DIFFUSER, PROVIDE JETTHROW PATTERN CONTROLLER, 48"x 9.1875" DUCT CONNECTION, AND BORDER 11.

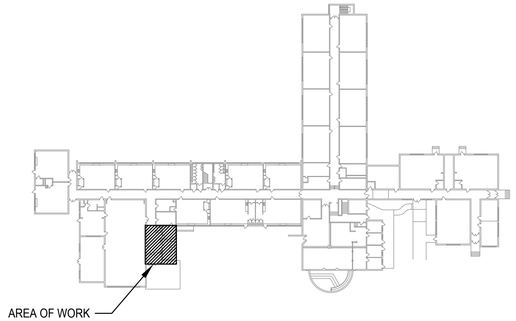


4 M100 PARTIAL ROOF PLAN – MECHANICAL

SCALE 1/4" = 1'-0"

NOTES:

1. AC UNIT AND ASSOCIATED CU SHALL BE INSTALLED UNDER BASE BID OR ALTERNATE BID.



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DRAWING DATE: 26 FEB 2021
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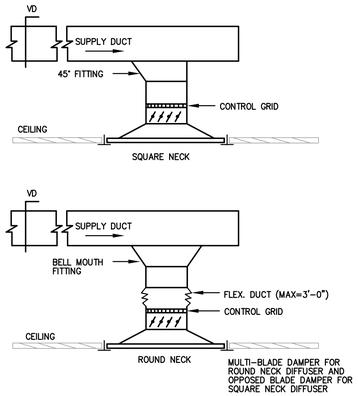
COMMISSION NO.: 5643A

SCHOOL 4

M100

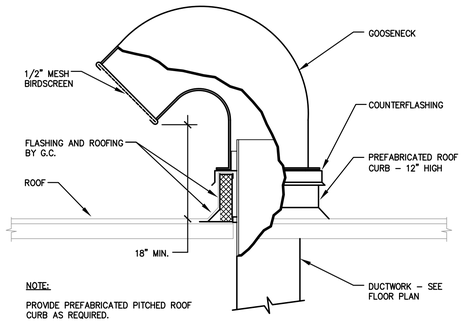
2 OF 5



1 M200 CEILING DIFFUSER TAKE-OFF DETAIL

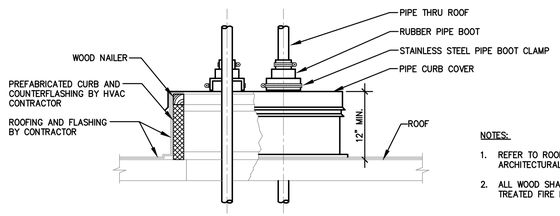
NOT TO SCALE

SIMILAR FOR RETURN & EXHAUST AIR OUTLET



2 M200 GOOSENECK DETAIL

NOT TO SCALE

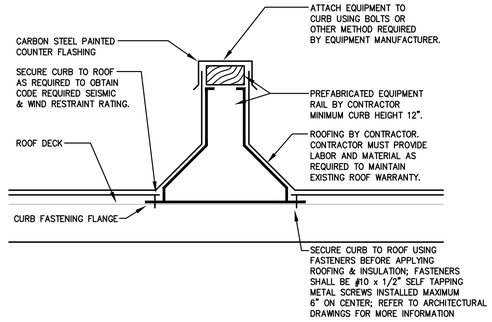


NOTES:

1. REFER TO ROOFING DETAILS ON ARCHITECTURAL DRAWINGS.
2. ALL WOOD SHALL BE PRESSURE TREATED FIRE RETARDANT.

3 M200 TYPICAL PIPE PENETRATION THROUGH ROOF

NOT TO SCALE



4 M200 EQUIPMENT RAIL DETAIL

NOT TO SCALE

ABBREVIATIONS

AC	AIR CONDITIONING UNIT	OAI	OUTSIDE AIR INTAKE
AFF	ABOVE FINISHED FLOOR	PD	PRESSURE DROP
AHC	ABOVE HUNG CEILING	%	PERCENT
ARCH	ARCHITECTURAL	PH	PHASE
APD	AIR PRESSURE DROP	RA	RETURN AIR
&	AND	RPM	REVOLUTIONS PER MINUTE
BHP	BRAKE HORSEPOWER	RR	RETURN REGISTER
CFM	CUBIC FEET PER MINUTE	SA	SUPPLY AIR
CU	CONDENSING UNIT	SENS	SENSIBLE
CD	CONDENSATE DRAIN	SF	SUPPLY FAN
DB	DRY BULB	SQ FT	SQUARE FOOT
DIA/ø	DIAMETER	SPEC	SPECIFICATIONS
DN	DOWN	SP	STATIC PRESSURE
DWG	DRAWING	SS	STAINLESS STEEL
EA	EACH, EXHAUST AIR	T	THERMOSTAT
EAT	ENTERING AIR TEMPERATURE	TA	THROW AWAY
EDB	ENTERING DRY BULB	TEMP	TEMPERATURE
ESP	EXTERNAL STATIC PRESSURE	TYP	TYPICAL
EXIST./(E)	EXISTING	V/PH/Hz	VOLTS/PHASE/HERTZ
°F	FAHRENHEIT	VD	VOLUME DAMPER
FC	FLEXIBLE CONNECTOR	WB	WET BULB
FLA	FULL LOAD AMPS	(W)	WATT
FPM	FEET PER MINUTE	W	WIDTH
H	HEIGHT, HIGH	W/	WITH
HR	HOUR	WMS	WIRE MESH SCREEN
Hz	HERTZ (FREQUENCY)	WPD	WATER PRESSURE DROP
IN	INCH	WT	WEIGHT
IWG	INCHES IN WATER GAUGE		
IWC	INCHES OF WATER COLUMN		
KHz	KILOHERTZ		
KW	KILOWATTS		
LAT	LEAVING AIR TEMPERATURE		
LBS/HR	POUNDS PER HOUR		
L	LENGTH		
LBS	POUNDS		
LDB	LEAVING DRY BULB		
LWB	LEAVING WET BULB		
LxWxH	LENGTH BY WIDTH BY HEIGHT		
LWT	LEAVING WATER TEMPERATURE		
MAX	MAXIMUM		
MBH	THOUSAND BTU PER HOUR		
MCA	MINIMUM CIRCUIT AMPACITY		
MIN	MINIMUM		
MOCP	MAX OVER CURRENT PROTECTION		
#, No.	NUMBER		
OA	OUTSIDE AIR		

HVAC SYMBOLS LIST

- X / X — EQUIPMENT DESIGNATION / ITEM NUMBER
- T — THERMOSTAT
- MD — MOTORIZED DAMPER
- SUPPLY AIR FLOW
- RETURN OR EXHAUST AIRFLOW
- 8x6 — DUCT SIZE, SECOND FIGURE IS HEIGHT SHOWN
- PIPE TURNED UP
- PIPE TURNED DOWN
- (E) HWS — (E) HEATING HOT WATER SUPPLY
- (E) HWR — (E) HEATING HOT WATER RETURN
- EXISTING WORK TO REMAIN
- EXISTING WORK TO BE REMOVED
- NEW WORK (DOUBLE-LINE & EQPT.)
- NEW WORK (SINGLE-LINE)
- VOLUME DAMPER (MANUAL)
- POINT OF REMOVAL

CONDENSING UNIT SCHEDULE

CU #

LOCATION		SCHOOL 4 – ROOF
TAG No.		CU-1
MANUFACTURER		DAIKIN
MODEL No.		RX18RMVJU9A
TYPE		HEAT PUMP
RATED COOLING CAPACITY	MBH	17.6
RATED HEATING CAPACITY	MBH	21.6
AHRI EER		12.5
REFRIGERANT DATA:		
REFRIGERANT TYPE		R410A
REFRIGERANT CHARGE	LBS	2.49
LIQUID LINE	IN	1/4
GAS LINE	IN	1/2
ELECTRICAL DATA:		
POWER	V/PH/HZ	208/1/60
MINIMUM CIRCUIT AMPS	AMPS	12.8
MAXIMUM FUSE SIZE	AMPS	15
NET WEIGHT (APPROX.)	LBS	110
DIMENSIONS (WxHxD)	IN	35x29x13

NOTES:

1. COMPLY WITH MANUFACTURER'S RECOMMENDED INSTALLATION INSTRUCTIONS.
2. INSTALL, SIZE, AND INSULATE REFRIGERANT PIPING ACCORDING TO MANUFACTURER'S INSTALLATION INSTRUCTIONS.
3. PROVIDE WEATHERPROOF FUSED DISCONNECT FOR OUTDOOR UNIT.
4. PROVIDE LOW AMBIENT HEATING AND WEATHER BAFFLE AS REQUIRED
5. PROVIDE SEISMIC RATED EQUIPMENT RAILING WITH VIBRATION ISOLATORS. BOTTOM OF CU SHALL BE 18" ABOVE FINISHED ROOF.
6. UNIT SHALL BE CCAPABLE OF COOLING DOWN TO –4 AND HEATING DOWN TO –13 DEGF
7. PROVIDE FACTORY START UP & PERSONNEL TRAINING.

VRV INDOOR AC UNIT SCHEDULE

AC #

INDOOR UNIT

LOCATION	TAG No.	MANUFACTURER	MODEL NO	COOLING TOTAL CAPACITY (MBH)	COOLING SENSIBLE CAPACITY (MBH)	HEATING TOTAL CAPACITY (MBH)	ELECTRICAL DATA V/PH/HZ	ELECTRICAL DATA MCA (A)	SUPPLY AIR CFM (MEDIUM)	APROX WEIGHT (LBS)	DIMESIONS W x H x D (IN)
SCHOOL 4	AC-1	DAIKIN	FDMQ18RVJU	17.6	14.93	21.6	208/1/60	1.22	572	100	40 x 10 x 32

NOTES:

1. INSULATE ALL REFRIGERATION LINES BETWEEN AC AND CU.
2. INSTALL AND WIRE UNITS AS PER MANUFACTURER'S WRITTEN INSTRUCTIONS. MAXIMUM LENGTH OF REFRIGERANT PIPING AND NUMBER OF ELBOWS MUST BE STRICTLY FOLLOWED.
3. REFRIGERANT PIPE SIZES AND LENGTHS SHALL BE PER MANUFACTURER'S RECOMMENDATIONS BASED ON FIELD CONDITIONS.
4. PROVIDE FACTORY START UP AND PERSONNEL TRAINING.
5. PROVIDE AC UNIT WITH DRAIN PAN LEVEL SENSOR THAT WILL SHUT OFF THE EQUIPMENT SERVED IN THE EVENT THAT THE PRIMARY DRAIN IS BLOCKED AS PER 2018 IMC 307.2.3.
6. PROVIDE FILTER KIT MODEL DFK BY BUCKLEY WITH BOTTOM ACCESS WITH 2" MERV 13 FILTER.
7. PROVIDE FUSED DISCONNECT.
8. PROVIDE WIRED PROGRAMMABLE THERMOSTAT.
9. PROVIDE STEEL HANGER SUPPORTS WITH VIBRATION ISOLATORS.

PLUMBING FIXTURE & CONNECTION SCHEDULE (ALTERNATE BID)

MARK	FIXTURE	MOUNTING	MANUFACTURER	MODEL NO.	TRIM NO.	SUPPORT NO.	V/PH/Hz	TRAP	WASTE	VENT MIN.	CW	HW	REMARKS
P-1	WATER COOLER & BI-LEVEL BOTTLE FILLING STATION	WALL HUNG	ELKAY	LMABFTLB8WSLK	EZH20	N/A	120/1/60	INTEGRAL	1-1/2"	1-1/2"	3/4"	N/A	A.D.A. COMPLIANT; BOTTLE FILLING STATION (SENSOR-ACTIVATED) AND BI-LEVEL WATER COOLER WITH FILTER

NOTE:

1. MOUNTING HEIGHTS FOR ALL FIXTURES SHALL BE AS INDICATED AND DIRECTED BY ARCHITECT.
2. ALL EXPOSED TRAP ASSEMBLIES AND WATER SUPPLIES TO BE INSULATED.

PLUMBING SYMBOL LIST

ABBREVIATION	SYMBOL	DESCRIPTION	ABBREVIATION	SYMBOL	DESCRIPTION
CW		COLD WATER PIPING	BV		BALL VALVE
(E) CW		(E) COLD WATER PIPING			PIPING DROP
V		VENT			PIPING RISE
(E) V		(E) VENT			BRANCH – TOP CONNECTION
SAN		SOIL, WASTE, OR SANITARY SEWER			BRANCH – BOTTOM CONNECTION
(E) SAN		(E) SOIL, WASTE OR SANITARY SEWER			NEW CONNECTION TO EXISTING
(E) ST		(E) STORM WATER PIPING			TRAP
		EXISTING PIPING TO BE REMOVED			
		CAPPED OUTLET			

DIFFUSER & REGISTER SCHEDULE

SELECTION BASED ON TITUS

NO.	MARK	REMARKS
1.	CD SHALL BE TITUS MODEL TMSA-AA OR APPROVED "EQUAL".	1 2 3 4
2.	CG/TG, CR/ER/RR SHALL BE TITUS MODEL 350-FL OR APPROVED "EQUAL".	4 5

REMARKS:

1. LOUVERED FACE, HIGH CAPACITY, ALUMINUM DIFFUSER WITH ROUND NECK AND ADJUSTABLE DISCHARGE PATTERN.
2. PROVIDE OPPOSED BLADE VOLUME DAMPER.
3. PROVIDE EQUALIZING GRID.
4. PROVIDE STANDARD WHITE FINISH.
5. ALUMINUM RETURN/EXHAUST REGISTER WITH BLADES AT 3/4" SPACING AND 35° FIXED DEFLECTION. REFER TO DRAWINGS FOR CORRECT MOUNTING STYLE.

CONDENSATE PUMP SCHEDULE

CP #

LOCATION		SCHOOL 4
TAG No.		CP-1
MANUFACTURER		LITTLE GIANT
MODEL		VCC-20-P
HEAD LIFT	FT	10
CAPACITY	GPH	45
ELECTRICAL DATA:		
POWER	V/PH/HZ	120/1/60
	HP	1/30
APPROX. WEIGHT	LBS	5

PROVIDE THE FOLLOWING:

1. BUILT-IN CHECK VALVE, FLOAT SWITCH, HARD WIRING, AND PLENUM RATING.

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TITLE: SCHEDULES & DETAILS - MECHANICAL

DRAWING DATE: 26 FEB 2021
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COMMISSION NO.: 5643A

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Frank Tindall, P.E.
Professional Engineer
NJ 38656

SCHOOL 4

M200

3 OF 5

HVAC SPECIFICATIONS:

1.0 GENERAL

A. GOVERNING CODES AND STANDARDS
  a. NJ UNIFORM CONSTRUCTION CODE
  b. 2018 INTERNATIONAL BUILDING CODE, NJ EDITION
  c. 2018 INTERNATIONAL MECHANICAL CODE
  d. NFPA STANDARDS 90A
  e. ALL APPLICABLE ASHRAE STANDARDS
  f. ALL APPLICABLE SMACNA STANDARDS
  g. 2017 NATIONAL ELECTRICAL CODE
  h. UL (ALL EQUIPMENT MUST BE LABELED)
  i. NEBB.

B. ALL WORK SHALL BE INSTALLED IN ACCORDANCE WITH RECOGNIZED INDUSTRY STANDARDS, GOVERNING CODES, APPROVED SHOP DRAWINGS AND MANUFACTURER'S INSTRUCTIONS.

C. PERMITS: ACQUIRE ALL PERMITS AND PAY ALL FEES FOR THIS WORK.

D. WARRANTY: THE EQUIPMENT SHALL HAVE A MANUFACTURER'S WARRANTY FOR A PERIOD OF TWO (2) YEARS FROM DATE OF FINAL ACCEPTANCE BY OWNER. IF DURING THIS PERIOD, ANY PART SHOULD FAIL TO FUNCTION PROPERLY DUE TO DEFECTS IN WORKMANSHIP OR MATERIAL, IT SHALL BE REPLACED OR REPAIRED AT THE DISCRETION OF THE MANUFACTURER. MANUFACTURER SHALL HAVE FIFTEEN YEARS EXPERIENCE IN THE U.S. MARKET.

E. BEFORE SUBMITTING BIDS, CONTRACTOR SHALL VISIT THE SITE OF THE WORK AND BECOME THOROUGHLY FAMILIAR WITH THE OBSERVABLE EXISTING CONDITIONS AFFECTING HIS WORK. NO ADDITIONAL COMPENSATION WILL BE GRANTED ON ACCOUNT OF EXTRA WORK MADE NECESSARY BY THE CONTRACTOR'S FAILURE TO INVESTIGATE EXISTING CONDITIONS.

F. SUBMIT COMPOSITE COORDINATION SHOP DRAWINGS THAT SHOW ALL EXISTING AND NEW DUCTWORK, HVAC PIPING, PLUMBING PIPING, CONDUITS, LIGHTING FIXTURES, BUILDING STRUCTURE, CEILING MOUNTED EQUIPMENT, ETC. EXACT ELEVATION OF ALL COMPONENTS SHALL BE INDICATED

G. CONTRACTOR SHALL SUBMIT MARKED UP HVAC DRAWINGS TO ENGINEER TO SHOW "AS-BUILT" CONDITIONS AFTER SATISFACTORY COMPLETION OF PROJECT.

H. CONTRACTOR SHALL PROVIDE OWNER WITH FIVE (5) COPIES OF OPERATION AND MAINTENANCE MANUALS PRIOR TO ACCEPTANCE OF FINAL PAYMENT.

2.0 SUBMITTALS

A. SHOP DRAWINGS SHALL BE REQUIRED FOR: ALL EQUIPMENT, MATERIALS, MEANS & METHODS INTENDED FOR USE UNDER THIS CONTRACT.

B. PRIOR TO DELIVERY TO THE JOB SITE, BUT SUFFICIENTLY IN ADVANCE OF REQUIREMENTS NECESSARY TO ALLOW ENGINEER AMPLE TIME FOR REVIEW, SUBMIT SHOP DRAWINGS OF ALL EQUIPMENT, FIXTURES, MATERIAL, PIPING, DUCTWORK, SLEEVES, WIRING DIAGRAMS, ETC. AND FURTHER OBTAIN WRITTEN COMMENTS OF "APPROVED" OR "APPROVED AS NOTED" FOR THE SAME FROM ENGINEER BEFORE INSTALLING ANY OF THESE ITEMS.

C. SHOP DRAWINGS SHALL CONSIST OF MANUFACTURER'S CERTIFIED SCALE DRAWINGS, CUTS, OR CATALOGUES, INCLUDING DESCRIPTIVE LITERATURE AND COMPLETE CERTIFIED CHARACTERISTICS OF EQUIPMENT, FIXTURES, ETC. SHOWING DIMENSIONS, CAPACITY, CODE REQUIREMENTS, MOTOR AND DRIVE TESTING, AS INDICATED IN THE CONTRACT DOCUMENTS.

D. FAILURE TO SUBMIT SHOP DRAWINGS IN AMPLE TIME FOR CHECKING SHALL NOT ENTITLE AN EXTENSION OF CONTRACT TIME, AND NO CLAIM FOR EXTENSION BY REASON OF SUCH DEFAULT SHALL BE ALLOWED.

E. PRIOR TO SUBMISSION OF SHOP DRAWINGS CONTRACTOR SHALL THOROUGHLY CHECK EACH SHOP DRAWING, REJECT THOSE NOT CONFORMING TO THE SPECIFICATIONS, AND INDICATE BY SIGNED, STAMPED, & WRITTEN DECLARATION THAT THE SHOP DRAWINGS SUBMITTED MEET CONTRACT REQUIREMENTS.

F. THE COMMENT "APPROVED" OR "APPROVED AS NOTED" RENDERED ON SHOP DRAWINGS SHALL NOT BE CONSIDERED AS A GUARANTEE OF MEASUREMENTS OR BUILDING CONDITIONS. WHERE DRAWINGS ARE REVIEWED, SAID REVIEW DOES NOT IN ANY WAY RELIEVE THE RESPONSIBILITY, OR NECESSITY, OF FURNISHING MATERIAL OR PERFORMING WORK AS REQUIRED BY THE CONTRACT DRAWINGS AND SPECIFICATIONS

G. "APPROVED AS NOTED" MEANS, UNLESS OTHERWISE NOTED ON THE DRAWINGS, TO APPROVE FOR CONSTRUCTION, FABRICATION, AND/OR MANUFACTURE SUBJECT TO THE PROVISION THAT THE WORK SHALL BE CARRIED OUT IN COMPLIANCE WITH ALL ANNOTATIONS AND/OR CORRECTIONS INDICATED ON THE SHOP DRAWINGS AND IN ACCORDANCE WITH THE REQUIREMENTS OF THE CONTRACT DOCUMENTS.
  1. WHERE THE COMMENT "APPROVED AS NOTED" INCLUDES DIRECTION TO THE CONTRACTOR TO RESUBMIT CORRECTED SHOP DRAWINGS FOR RECORD; FAILURE TO COMPLY WITH THE INSTRUCTION TO RESUBMIT RECORD COPY SHALL RENDER ALL APPROVAL NULL AND VOID.

3.0 IDENTIFICATION

A. PROVIDE IDENTIFICATION FOR PIPING, DUCTWORK AND EQUIPMENT.

B. IDENTIFICATION SHALL BE IN ACCORDANCE WITH "SCHEME FOR IDENTIFICATION OF PIPING SYSTEM ANSI A13.1" AND OSHA SAFETY COLOR REGULATION.

C. MARKERS SHALL BE SNAP-ON TYPE AS MANUFACTURED BY SETON NAMEPLATE CORP., NEW HAVEN, CONN. (SETMARK SYSTEM), BUNTING STAMP CO. INC., PITTSBURGH, P.A. OR APPROVED EQUAL. MARKERS SHALL COMPLETELY ENCIRCLE THE PIPE WITH A SUBSTANTIAL OVERLAP. NO ADHESIVE SHALL BE USED. THEY SHALL BE MANUFACTURED OF U.L. APPROVED, SELF-EXTINGUISHING PLASTIC . WHEN THE PIPE INCLUDING INSULATION (IF ANY) IS 6" DIAMETER AND LARGER, MARKERS SHALL BE STRAP-ON TYPE.

D. PIPE SHALL BE LETTERED AND VALVES TAGGED. LETTERING SHALL BE LOCATED NEAR EACH VALVE AND BRANCH CONNECTION AND AT INTERVALS OF NOT OVER 40' ON STRAIGHT RUNS OF PIPE. PROVIDE FLOW ARROWS FOR ALL PIPING AT EACH MARKER. ADJACENT TO THE LEGEND, STENCIL THE SIZE OF THE PIPE, CONDUIT OR DUCTWORK. LETTER COLORS ARE AS FOLLOWS: YELLOW WITH BLACK LETTERS, GREEN WITH WHITE LETTERS, AND RED WITH WHITE LETTERS.

E. PROVIDE FOR EACH ITEM OF EQUIPMENT, INCLUDING AIR HANDLING AND CONDENSING UNITS, A PERMANENTLY ATTACHED NAMEPLATE MADE OF BLACK SURFACE, WHITE CORE LAMINATED BAKELITE WITH INCISED LETTERS. SUBCONTRACTOR FURNISHING EQUIPMENT SHALL PROVIDE NAMEPLATE. NAMEPLATES SHALL BE A MINIMUM OF 3" LONG BY 1 1/2" WIDE AND SHALL BEAR THE EQUIPMENT NAME AND ITEM NUMBER OF 1/2" HIGH WHITE LETTERS AS DESIGNATED IN THE EQUIPMENT SCHEDULE. MOUNTING SCREWS SHALL HAVE CHROME PLATED ACORN HEADED SCREWS.

4.0 BALANCING

A. NEBB CERTIFIED BALANCING COMPANY MUST BE A COMPANY WHICH IS INDEPENDENT OF THE CONTRACTOR AND BE APPROVED FOR USE BY THE OWNER PRIOR TO BALANCING THE SYSTEM.

B. BALANCE THE HEATING AND COOLING SYSTEMS TO PROVIDE UNIFORM TEMPERATURES IN ALL HEATED OR COOLED AREAS AND ROOMS.

C. BALANCE AIR SYSTEMS TO QUANTITIES INDICATED AND FURNISH A REPORT INDICATING DIFFUSER, REGISTER SIZES, LOCATIONS AND CFM VALUES INCLUDING CFM ACTUAL FAN PERFORMANCE DATA.

D. THE CONTRACTOR SHALL SUBMIT AN AIR BALANCE REPORT PRIOR TO FINAL ACCEPTANCE.

E. THE FOLLOWING DATA SHALL BE OBTAINED AND RECORDED AT THE SUPPLY FAN.
  1. FAN AND MOTOR RPM.
  2. MOTOR AND CURRENT VOLTAGE.
  3. FAN, COIL AND FILTER STATICS.
  4. NAMEPLATE DATA ON FAN AND MOTOR.
  5. MOTOR SHEAVE, FAN PULLY AND BELT SIZES.

F. MEASURE THE SYSTEM DUCT STATIC PRESSURE.

G. BALANCE THE OUTLETS TO DESIGN CFM AND RECORD ALL READINGS.

5.0 SHEET METAL WORK

A. FURNISH AND INSTALL ALL SHEET METAL DUCTWORK, PLENUMS, AND ITEMS OF METAL WORK AS NECESSARY TO COMPLETE THE VARIOUS AIR CONDITIONING, VENTILATING AND HEATING SYSTEMS OF THE BUILDING SO THEY ARE READY FOR SATISFACTORY OPERATION. WHILE THE INSTALLATION SHOULD ADHERE TO THE PLANS AND SPECIFICATIONS AS MUCH AS POSSIBLE, THE CONTRACTOR SHALL BE ENTITLED TO MODIFY THE RUNS AND SIZES OF THE DUCTWORK AND TO MAKE OFFSETS, WHERE NECESSARY TO ACCOMMODATE BUILDING CONDITIONS, ONLY AFTER RECEIPT OF WRITTEN APPROVAL FROM THE ENGINEER. ALL SUCH CHANGES OR OFFSETS SHALL BE INDICATED IN THE "AS-BUILT" DRAWINGS SUBMITTED AT THE END OF THE JOB.

B. DUCTWORK SHALL BE CONSTRUCTED ACCORDING TO THE "EQUIPMENT HANDBOOK" PUBLISHED BY ASHRAE AND "HVAC DUCT CONSTRUCTION STANDARDS" PUBLISHED BY SMACNA.

C. SHEET METAL GAUGES, TRANSVERSE JOINTS, LONGITUDINAL SEAMS AND INTERMEDIATE REINFORCING MUST BE IN CONFORMANCE WITH SMACNA STANDARDS FOR 6" W.G. AND SEAL CLASS A.

D. ALL DUCTWORK SHALL BE CONSTRUCTED OF GALVANIZED STEEL OF U.S. D. STANDARD SHEET METAL GAUGE UNLESS NOTED OTHERWISE ON THE DRAWINGS. ALL JOINTS SHALL BE SEALED AIRTIGHT WITH 3MEC-800. CONNECTIONS TO FAN SHALL BE THRU ACID RESISTANT RUBBER NOT LESS THAN 4" LONG, FUME TIGHT AND SECURELY FASTENED WITH COPPER METAL BANDS.

E. ALL CHANGES IN DIRECTION, HORIZONTAL OR VERTICAL, SHALL BE SHAPED TO PERMIT THE EASIEST POSSIBLE AIR FLOW, USING CENTERLINE RADIUS OF 1-1/2 X WIDTH. FOR ALL CASES WHERE 90 DEGREE SQUARE ELBOWS ARE USED, APPROVED DOUBLE THICKNESS TURNING VANES SHALL BE USED. HVAC CONTRACTOR SHALL SUBMIT DETAILS FOR APPROVAL.

F. ALL DUCTWORK SHALL BE BUILT WITH APPROVED JOINTS AND SEAMS SMOOTH ON THE INSIDE WITH LAPS MADE IN THE DIRECTION OF THE AIR FLOW AND NO FLANGES PROJECTING INTO THE AIR STREAM. OUTSIDE SEAMS AND JOINTS SHALL BE AS NEAR TO AIR TIGHT AS POSSIBLE WITH A NEAT FINISH. THE CONTRACTOR SHALL CAULK ALL JOINTS WHICH ARE NOT MECHANICALLY TIGHT.

G. LONGITUDINAL JOINTS SHALL BE PITTSBURGH LOCK AT CORNERS OR ACME LOCK ON FLAT SURFACES DOUBLE SEAMS HAMMERED TIGHT AND SHALL BE LOCATED ABOVE THE HORIZONTAL AXIS OF THE DUCT. A SNAP LOCK SEAM SHALL NOT BE PERMITTED AS A SUBSTITUTE FOR THE PITTSBURGH LOCK AT CORNERS OF DUCTS.

H. TRAVERSE JOINTS SHALL BE MADE AIRTIGHT WITH ALL LAPS IN THE DIRECTIONS OF AIR FLOW.

I. VOLUME DAMPERS AS SHOWN ON DRAWINGS AND AS REQUIRED FOR PROPER OPERATION SHALL BE INSTALLED IN THE VARIOUS BRANCHES FOR USE IN BALANCING THE SYSTEM. VOLUME DAMPERS SHALL BE OF MULTI-OPPOSED BLADE CONSTRUCTION WITH LOCKING QUADRANTS FOR ALL DUCTS OVER 12" IN DEPTH. MOUNTED OUTSIDE OF THE DUCT IN AN ACCESSIBLE PLACE. VOLUME DAMPERS SHALL BE RUSKIN MODEL MD35 OR APPROVED EQUAL WITH END BEARINGS, STAND OFF FOR INSULATED DUCTWORK AND CONTINUOUS AXLE & LOCKING QUADRANT.

J. ALL DUCTWORK SHALL BE HUNG FROM THE BUILDING STRUCTURE.

K. ALL DUCTWORK SHALL BE INTERNALLY LINED WITH ANTI-MICROBIAL MINIMUM 1" THICK, 2 LB DENSITY FIBROUS GLASS. INTERNAL LINING SHALL MEET THE REQUIREMENTS OF NFPA 90A, WITH FLAME SPREAD, SMOKE DEVELOPMENT, AND FUEL CONTRIBUTED NOT EXCEEDING 25, 50, AND 50 RESPECTIVELY AS TESTED BY PROCEDURE ASTM-84, NFPA 255, AND UL 723 UNLESS OTHERWISE NOTED. INTERNAL LINING SHALL PROVIDE MINIMUM R VALUE OF 6.0 WHEN INSTALLED.

6.0 SUPPORTS

A. ALL SUPPORTS AND HANGERS FOR EQUIPMENT, DUCTWORK AND PIPING UNDER THIS CONTRACT SHALL BE FURNISHED AND INSTALLED BY THE CONTRACTOR.

B. ALL HANGERS, SUPPORTS, & HARDWARE SHALL BE GALVANIZED UNLESS OTHERWISE INDICATED.

C. WHERE EXCESSIVE LOADING REQUIRES PROPER DISTRIBUTION OF THE WEIGHT, PROPER SUPPORTS MUST BE PROVIDED, SUBJECT TO THE ARCHITECT'S APPROVAL. ALL SUPPORTS SHALL BE OF STRUCTURAL STEEL.

7.0 PIPING

7.1 CONDENSATE DRAIN PIPING

A. ALL PIPES SHALL BE NEW, FREE FROM SCALE OR RUST, OF THE MATERIAL AND WEIGHT SPECIFIED UNDER THE VARIOUS SERVICES. EACH LENGTH OF PIPE SHALL BE PROPERLY MARKED AT THE MILL FOR PROPER IDENTIFICATION WITH NAME OR SYMBOL OF MANUFACTURER.

B. ALL COPPER TUBING SHALL BE OF WEIGHT AS REQUIRED FOR SERVICE SPECIFIED, WITH CONFORMANCE WITH ASTM B-88 FOR TYPES "L" AND "K" TUBING, AS MANUFACTURED BY CHASE, ANACONDA, REVERE, OR APPROVED EQUAL. TUBING AND FITTINGS SHALL BE THOROUGHLY CLEANED WITH SAND CLOTH AND TREATED WITH AN APPROVED NON-CORROSIVE FLUX BEFORE SOLDER IS APPLIED.

C. COPPER TUBING JOINTS SHALL BE MADE WITH 95-5 SOLDER FOR WATER APPLICATIONS.

SERVICE	MATERIAL	SCHEDULE
OVERFLOW AND DRAIN	COPPER	TYPE L (HARD)

7.2 FITTINGS

A. FITTINGS SHALL BE OF MATERIAL CONFORMING TO THE FOLLOWING SCHEDULE: SOLDER FITTINGS ASTM B-88, 150 LBS. FOR WATER SERVICE & 300 LBS. FOR REFRIGERANT.

B. FLANGES SHALL BE RAISED FACE, OF THE SAME WEIGHT AS THE FITTINGS IN EACH SERVICE CATEGORY. ALL FLANGES SHALL BE DRILLED TO "US STANDARD" HEX NUTS AND WASHERS. BOLTING SHALL CONFORM TO ASTM 193 GRADE B-7, THREADS CLASS 7 FIT. NUTS SHALL BE SEMI-FINISHED HEXAGONAL, ANSI B18.2 ASTM A194 GRADE 2H.

7.3 PIPE HANGERS AND SUPPORTS

A. PROVIDE NECESSARY STRUCTURAL MEMBERS, HANGERS AND SUPPORTS OF APPROVED DESIGN TO KEEP PIPING IN PROPER ALIGNMENT AND PREVENT TRANSMISSION OF INJURIOUS THRUSTS AND VIBRATIONS. IN ALL CASES WHERE HANGERS, BRACKETS, ETC., ARE SUPPORTED FROM CONCRETE CONSTRUCTION, CARE SHALL BE TAKEN NOT TO WEAKEN CONCRETE OR PENETRATE WATERPROOFING. ALL HANGERS AND SUPPORTS SHALL BE CAPABLE OF SCREW ADJUSTMENT AFTER PIPING IS ERECTED. HANGERS SUPPORTING PIPING EXPANDING INTO LOOPS, BENDS AND OFFSETS SHALL BE SECURED TO THE BUILDING STRUCTURE IN SUCH A MANNER THAT HORIZONTAL ADJUSTMENT PERPENDICULAR TO THE RUN OF PIPING SUPPORTED MAY BE MADE TO ACCOMMODATE DISPLACEMENT DUE TO EXPANSION. ALL SUCH HANGERS SHALL BE FINALLY ADJUSTED, BOTH IN THE VERTICAL AND HORIZONTAL DIRECTION, WHEN THE SUPPORTED PIPING IS HOT, OR CHILLED, AS REQUIRED. ALL PIPE HANGERS, SUPPORTS, & HARDWARE SHALL BE GALVANIZED UNLESS OTHERWISE INDICATED. METAL TO METAL CONTACT IS TO BE AVOIDED. HANGERS IN CONTACT WITH COPPER SHALL BE COPPER PLATED STEEL.

B. PIPE HANGERS SHALL BE THE CLEVIS TYPE, EXCEPT WHERE OTHERWISE NOTED.

PIPE HANGER SCHEDULE:

PIPE	MAKE AND MODEL TYPE OF HANGER	GRINNELL FIG. NO.	F & M FIG. NO.	CARPENTER& PATERSON FIG. NO.
2" & SMALLER (COPPER)	ADJUSTABLE WROUGHT IRON	CT-65	364	100CT

C. HANGER RODS SHALL BE OF THE FOLLOWING DIAMETERS:

PIPE SIZE:	ROD DIAMETER:	MAXIMUM SPACING:
1 1/4" & BELOW	3/8"	6' – 0" (COPPER 8' – 0")

D. BEAM CLAMPS – HANGERS SUPPORTED FROM FLOOR STEEL SHALL BE APPROVED I BEAM CLAMPS. I BEAM CLAMPS FOR HANGERS SUPPORTING PIPING 2" AND SMALLER SHALL BE C & P FIG. NO. 148 ADJUSTABLE BEAM CLAMPS.

E. ALL VERTICAL PIPING SHALL BE ANCHORED BY MEANS OF HEAVY STEEL CLAMPS SECURELY BOLTED OR WELDED TO THE PIPING, AND WITH END EXTENSION BEARING ON THE BUILDING.

F. PIPING SHALL NOT BE HUNG FROM OTHER PIPING DUCTS, CONDUITS OR FROM EQUIPMENT OF OTHER TRADES AND NO VERTICAL EXPANSION SHIELDS WILL BE PERMITTED. HANGER RODS SHALL NOT PIERCE DUCTS.

G. WHERE ADDITIONAL STEEL IS REQUIRED FOR THE SUPPORT OF HANGERS, FURNISH AND INSTALL SAME SUBJECT TO THE APPROVAL OF THE ARCHITECT.

H. PIPING RUNNING ON WALLS SHALL BE SUPPORTED BY MEANS OF HANGER SUSPENDED FROM HEAVY ANGLE IRON WALL BRACKETS. NO WALL HOOKS WILL BE PERMITTED.

I. LATERAL BRACING OF HORIZONTAL PIPE SHALL BE PROVIDED WHERE REQUIRED TO PREVENT SIDE SWAY OR VIBRATION. THE LATERAL BRACING SHALL BE OF A TYPE APPROVED BY THE ARCHITECT AND SHALL BE INSTALLED WHERE DIRECTED BY THE ARCHITECT.

7.4 REFRIGERATION PIPING

A. UNLESS OTHERWISE NOTED, ALL REFRIGERATION PIPING SHALL BE REFRIGERATION ACR GRADE ANNEALED OR DRAWN TEMPER COPPER TUBING, DEGREASED, & SEALED.

B. FITTINGS SHALL BE WROUGHT COPPER OR FORGED BRASS AND ONLY LONG RADIUS ELBOWS OR OR FORMED LONG SWEEP ELBOWS SHALL BE USED. ALL CHANGES IN LINE SIZE SHALL BE ACCOMPLISHED WITH FITTINGS. ABSOLUTELY NO STAB-INS ARE PERMITTED.

C. ALL PIPING JOINTS SHALL BE BRAZED WITH SILVER SOLDER, WITH CONTINUOUS N2 PURGE.

D. PROTECTION OF THE PIPING SYSTEMS SHALL BE THIS CONTRACTOR'S RESPONSIBILITY. TEMPORARY PROTECTION SHALL BE PROVIDED UNTIL THE JOB IS IN SATISFACTORY CONDITION, AND PERMANENT PROTECTION SHALL BE PROVIDED BY THE BUILDING CONTRACTOR AS REQUIRED TO PROTECT THE PIPING, FITTING, ETC FROM DAMAGE.

E. INSTALL SCHRADER TYPE VALVES AT THE EVAPORATOR OUTLET OF EACH FIXTURE TO FACILITATE THE ADJUSTMENT OF SUPER HEAT SETTINGS AND TO ESTABLISH PRESSURE DROP. LIQUID LINES CAN BE AFFIXED TO THE SUCTION INSULATION VIA APPROVED DUCT TAPES.

F. SIZE, CHARGE, AND INSULATION OF ALL REFRIGERANT PIPING SHALL BE IN ACCORDANCE WITH THE EQUIPMENT MANUFACTURER'S INSTRUCTIONS.

7.5 REFRIGERATION VALVES

A. ALL VALVES FOR REFRIGERATION SERVICES SHALL BE DIAPHRAGM PACKLESS VALVES. FORGED BRASS OR CAST BRONZE, GLOBE DESIGN WITH STRAIGHT THROUGH OR ANGLE PATTERN. WORKING PRESSURE RATING: 500 PSIG. MAXIMUM OPERATING TEMPERATURE: 275°F.

8.0 INSULATION

8.1 PIPING INSULATION

A. THE FOLLOWING PIPING SHALL BE COVERED WITH FIBERGLASS INSULATION WITH VAPOR BARRIER OF THE FOLLOWING THICKNESS:

SERVICE	THICKNESS
CONDENSATE DRAIN	1/2"

B. INSULATION SHALL BE GLASS FIBER WITH A MAXIMUM K FACTOR OF 0.23 AT 75 DEGREES F. MEAN TEMPERATURE WITH FACTORY-APPLIED ALL SERVICE VAPOR BARRIER JACKET. DENSITY SHALL BE NOT LESS THAN 3 LBS. PER CUBIC FOOT.

C. INSULATION SHALL BE HEAVY DENSITY FIBERGLASS SECTIONAL PIPE INSULATION AS MADE BY OWENS-CORNING FIBERGLAS CORP. OR CSG'S "SNAP-ON" OR MANVILLE "FLAME SAFE" FIBERGLASS INSULATION.

D. ALL FITTINGS, VALVES AND FLANGES FOR PIPE SIZES SMALLER THAN 4" SHALL BE INSULATED WITH MOLDED FIBER GLASS FITTINGS OF SAME THICKNESS AS THE ADJOINING PIPE INSULATION, SECURED WITH NO. 20 GAUGE GALVANIZED ANNEALED STEEL WIRE ZESTON 25/50 PVC AS MADE BY MANVILLE, OR APPROVED EQUAL.

E. DIRECT CONTACT BETWEEN PIPE AND HANGER SHALL BE AVOIDED.

F. AT PIPE SUPPORTS INSULATION SHIELD PROTECTION SADDLES, HIGH DENSITY INSULATION SUPPORT BLOCKS, AND MATCHING HANGER SHALL BE USED.

G. ALL EXPOSED INSULATED PIPING IN BUILDING THAT IS WITHIN 7'-0" OF THE FINISHED FLOOR SHALL BE JACKETED WITH 0.016" THICK ALUMINUM WITH ½" ALUMINUM BARDS SPACED 18" O.C.

8.2 PVC INSULATED FITTING COVERS

A. THE CONTRACTOR SHALL HAVE OPTION TO USE ZESTON 25/50 RATED PVC COVERS AS MADE BY MANVILLE OR APPROVED EQUAL.

8.3 REFRIGERATION PIPING INSULATION

A. THE FOLLOWING PIPING SHALL BE COVERED WITH CLOSED CELL ELASTOMERIC INSULATION WITH VAPOR BARRIER OF THE FOLLOWING THICKNESS:

SERVICE	THICKNESS
REFRIGERANT PIPING	3/4"

B. INSULATION SHALL BE FLEXIBLE CLOSED CELL ELASTOMERIC WITH A MAXIMUM K FACTOR OF 0.27 AT 75 DEGREES F MEAN TEMPERATURE.

C. INSULATION SHALL BE MANUFACTURED BY ARMACELL LLC OR APPROVED EQUAL.

9.0 – EXECUTION

9.1 INSTALLATION

A. COORDINATE WITH OTHER WORK AS NECESSARY TO INTERFACE INSTALLATION OF PIPING WITH OTHER COMPONENTS OF SYSTEMS.

B. PROVIDE AND ERECT IN A WORKMANLIKE MANNER, ACCORDING TO THE BEST PRACTICES OF THE TRADE, ALL PIPING SHOWN ON THE DRAWINGS OR REQUIRED TO COMPLETE THE INSTALLATION INTENDED BY THESE SPECIFICATIONS.

C. THE DRAWINGS INDICATE SCHEMATICALLY THE SIZE AND LOCATION OF PIPING. PIPING SHALL BE SET UP AND DOWN AND OFFSET TO MEET FIELD CONDITIONS AND TO PROVIDE ADEQUATE MAINTENANCE ROOM AND HEADROOM IN THE SERVICE CORRIDOR.

D. ALL EXPOSED PIPING IN VIEW SHALL RUN PERPENDICULAR AND/OR PARALLEL TO FLOORS, INTERIOR WALLS, ETC. PIPING AND VALVES SHALL BE GROUPED NEATLY AND SHALL RUN SO AS TO AVOID REDUCING HEADROOM OR PASSAGE CLEARANCE. PROVIDE MIN. 7'-6" HEADROOM UNDER PASSAGEWAY IN SERVICE CORRIDOR. ALL VALVES, CONTROLS AND ACCESSORIES CONCEALED IN FURRED SPACES AND REQUIRING ACCESS FOR OPERATION AND MAINTENANCE SHALL BE ARRANGED TO ASSURE THE USE OF A MINIMUM NUMBER OF ACCESS DOORS.

E. ALL PIPING SHALL BE ERECTED AS TO INSURE A PERFECT AND NOISELESS CIRCULATION THROUGHOUT THE SYSTEM. NO BULL HEAD TEES WILL BE PERMITTED.

F. ALL VALVES AND SPECIALTIES SHALL BE PLACED SO AS TO PERMIT EASY OPERATION AND ACCESS.

G. ALL PIPING CONNECTIONS TO COILS AND EQUIPMENT SHALL BE MADE WITH OFFSETS PROVIDED WITH SCREWED OR WELDED BOLTED FLANGES SO ARRANGED THAT THE EQUIPMENT CAN BE SERVICED OR REMOVED WITHOUT DISMANTLING THE PIPING.

H. IF, AFTER FACILITY IS IN OPERATION, ANY COILS OR OTHER APPARATUS ARE STRATIFIED OR AIR BOUND (BY VACUUM OR PRESSURE), THEY SHALL BE REPIPED WITH NEW APPROVED AND NECESSARY FITTINGS, AIR VENTS, OR VACUUM BREAKERS AT NO EXTRA COST. IF CONNECTIONS ARE CONCEALED IN FURRING, FLOORS OR CEILINGS, BEAR ALL EXPENSES OF TEARING UP AND REFINISHING CONSTRUCTION AND FINISH, LEAVING SAME IN AS GOOD CONDITION AS BEFORE IT WAS DISTURBED.

I. FITTINGS SHALL BE OF THE ECCENTRIC REDUCING TYPE, WHERE CHANGES OF SIZE OCCUR IN HORIZONTAL PIPING TO PROVIDE FOR PROPER DRAINAGE OR VENTING.

J. TUBING SHALL BE ERECTED NEATLY IN A WORKMANLIKE MANNER. BENDS IN SOFT COPPER TUBING SHALL BE CREATED WITH BENDERS TO PREVENT DEFORMATION OF THE TUBING IN THE BENDS.

K. THE ENDS OF ALL PIPE AND NIPPLES SHALL BE THOROUGHLY REAMED TO THE FULL INSIDE DIAMETER OF THE PIPE AND ALL BURRS FORMED IN THE CUTTING OF THE PIPES SHALL BE REMOVED.

L. PIPING SHALL BE INSTALLED IN ACCORDANCE WITH THE LATEST EDITION OF THE ASME CODE FOR PRESSURE PIPING.

M. DISSIMILAR PIPING SHALL BE CONNECTED WITH DIELECTRIC FITTINGS BY THE PERFECTION CORPORATION (NO DIELECTRIC UNION).

9.2 TESTING OF PIPING

A. ALL NEW R-410A REFRIGERANT PIPING SHALL BE TESTED AS HEREINAFTER SPECIFIED:
  1. SUCTION LINES FOR HEAT-PUMP APPLICATIONS: 535 PSIG
  2. HOT-GAS & LIQUID LINES: 535 PSIG

10.0 SINGLE SPLIT AIR CONDITIONING (HEAT PUMP)

10.1 SYSTEM DESCRIPTION

A. THE VARIABLE CAPACITY, HEAT PUMP SYSTEM SHALL BE A DAIKIN INVERTER DRIVEN SERIES OR APPROVED EQUAL (HEAT/COOL MODEL) SPLIT SYSTEM. THE SYSTEM SHALL CONSIST OF A DUCTED CONCEALED EVAPORATOR MODEL FDMQ12RVJU EXCLUSIVELY MATCHED TO OUTDOOR MODEL RXL12QMVJU9.

10.2 WARRANTY

A. COMMERCIAL INSTALLATIONS: THIS WARRANTY APPLIES TO HEATING AND AIR CONDITIONING UNITS INSTALLED IN BUILDINGS OTHER THAN RESIDENCES AND COVERS DEFECTS IN MATERIALS AND WORKMANSHIP THAT APPEAR UNDER NORMAL USE AND MAINTENANCE. WARRANTY COVERAGE BEGINS ON THE DATE OF ACCEPTANCE. THE WARRANTY LASTS FOR A PERIOD OF 5 YEARS.

10.3 INDOOR UNIT

A. THE INDOOR UNIT SHALL BE FACTORY ASSEMBLED AND PRE-WIRED WITH ALL NECESSARY ELECTRONIC AND REFRIGERANT CONTROLS. BOTH LIQUID AND SUCTION LINES MUST BE INDIVIDUALLY INSULATED BETWEEN THE OUTDOOR AND INDOOR UNITS.

B. UNIT CABINET:
  1. THE INDOOR UNIT SHALL BE CONSTRUCTED OF HEAVY GAUGE GALVANIZED STEEL.
  2. THE UNIT SHALL BE INTERNALLY INSULATED AND SHALL BE CAPABLE OF INSTALLATION IN INDOOR ENVIRONMENTS UP TO 80% RELATIVE HUMIDITY WITHOUT REQUIRING ADDITIONAL FIELD INSTALLED INSULATION.

C. FAN:
  1. THE EVAPORATOR FAN SHALL BE AN ASSEMBLY CONSISTING OF A DIRECT-DRIVEN FAN BY A SINGLE MOTOR.
  2. THE FAN SHALL BE STATICALLY AND DYNAMICALLY BALANCED AND OPERATE ON A MOTOR WITH PERMANENT LUBRICATED BEARINGS.
  3. THE INDOOR FAN SHALL OFFER A CHOICE OF THREE SPEEDS, PLUS QUIET SETTING.
  4. THE UNIT SHALL BE EQUIPPED WITH INTERNAL CONTROLS TO ALLOW THE FAN MOTOR TO BE MANUALLY ADJUSTED, VIA FIELD SETTING, TO DELIVER AIRFLOW AT A VARIETY OF EXTERNAL STATIC PRESSURES. MODEL FDMQ12RVJU SHALL HAVE 13 AVAILABLE FAN CURVES. MODELS FDMQ18RVJU THROUGH FDMQ24RVJU SHALL HAVE 11 AVAILABLE FAN CURVES.

D. COIL:
  1. THE EVAPORATOR COIL SHALL BE A NONFERROUS, ALUMINUM FIN ON COPPER TUBE HEAT EXCHANGER.
  2. A CONDENSATE PAN SHALL BE PROVIDED UNDER THE COIL WITH A DRAIN CONNECTION.
    i. THE UNIT SHALL BE EQUIPPED WITH A FACTORY-INTEGRAL CONDENSATE LIFT MECHANISM CAPABLE OF 26-9/16 INCHES OF LIFT.
    CONTRACTOR SHALL PROVIDE THEIR OWN 2"MERV 13 FILTER KIT OR USE 2"MERV 13 FILTER KIT PROVIDED BY UNIT MANUFACTURER

E. ELECTRICAL:
  1. THE OUTDOOR UNIT SHALL BE POWERED WITH 208-230 VOLTS, 1 PHASE, AND 60 HERTZ POWER. THE INDOOR UNIT SHALL RECEIVE 208-230 VOLT, 1 PHASE, 60 HERTZ POWER FROM THE OUTDOOR UNIT.
  2. THE ALLOWABLE VOLTAGE RANGE SHALL BE 187 VOLTS TO 253 VOLTS.

F. CONTROL:
  1. THE UNIT SHALL HAVE A WIRED TYPE REMOTE CONTROLLER

G. SOUND:
  1. INDOOR UNIT SOUND LEVELS ARE AS FOLLOWS:

INDOOR DAIKIN MODEL:	COOLING MODE SOUND LEVEL DB(A):	HEATING MODE SOUND LEVEL DB(A):
FDMQ18RVJU	35	35

*VALUES ARE MEASURED APPROXIMATELY 5 FEET AWAY WITH FAN SPEED ON HIGH, APPROXIMATELY 6.6 FT OF SUPPLY DUCT, AND 3.3 FT OF RETURN DUCT.

10.4 OUTDOOR UNIT

A. GENERAL:
  THE OUTDOOR UNIT SHALL BE SPECIFICALLY MATCHED TO THE CORRESPONDING INDOOR UNIT SIZE. THE OUTDOOR UNIT SHALL BE COMPLETE FACTORY ASSEMBLED AND PRE-WIRED WITH ALL NECESSARY ELECTRONIC AND REFRIGERANT CONTROLS. UNIT CABINET:
  1. THE OUTDOOR UNIT SHALL BE COMPLETELY WEATHERPROOF AND CORROSION RESISTANT. THE UNIT SHALL BE CONSTRUCTED FROM RUST-PROOFED MILD STEEL PANELS COATED WITH A BAKED ENAMEL FINISH.

B. FAN:
  1. THE FAN SHALL BE A DIRECT DRIVE, PROPELLER TYPE FAN.
  2. THE MOTOR SHALL BE INVERTER DRIVEN, PERMANENTLY LUBRICATED TYPE BEARINGS, INHERENT.

C. COIL:
  1. THE OUTDOOR COIL SHALL BE NONFERROUS CONSTRUCTION WITH CORRUGATED FIN TUBE.
  2. THE FINS ARE TO BE COVERED WITH AN ANTI-CORROSION ACRYLIC RESIN AND HYDROPHILIC FILM TYPE E1, RATED FOR UP TO 1000 HOURS SALT SPRAY.
  3. AUTOMATIC DEFROST WILL REMOVE ANY FROST FROM THE OUTDOOR UNIT ALLOWING THE SYSTEM TO MAINTAIN HEATING CAPACITY.

D. COMPRESSOR:
  1. THE OUTDOOR COMPRESSOR SHALL BE A PATENTED, VARIABLE SPEED DAIKIN SWING INVERTER-DRIVEN COMPRESSOR. THE ONE PIECE ACTION REDUCES NOISE, EXTENDS LIFE, BOASTS HIGHER EFFICIENCY AND REDUCES ENERGY CONSUMPTION.
  2. THE OUTDOOR UNIT CAN OPERATE WITH A MAXIMUM VERTICAL HEIGHT DIFFERENCE OF 65-5/8 FEET AND OVERALL MAXIMUM LENGTH OF 98-1/2 FEET WITHOUT ANY OIL TRAPS OR ADDITIONAL COMPONENTS.
  3. THE COMPRESSOR SHALL HAVE A QUICK-WARMING FUNCTION TO PREVENT PUMPING LIQUID REFRIGERANT IN LOW-AMBIENT CONDITIONS.

E. ELECTRICAL:
  1. THE ELECTRICAL POWER REQUIREMENT IS 208-230 VOLT, 1-PHASE, AND 60 HZ POWER.

F. SOUND:
  1. OUTDOOR UNIT SOUND LEVELS SHALL NOT EXCEED:

OUTDOOR DAIKIN MODEL:	COOLING MODE SOUND LEVEL dB(A):	HEATING MODE SOUND LEVEL dB(A):
RXL18UMVJUA	54	55

*VALUES ARE BASED ON HIGH FAN SPEED AND ARE MEASURED APPROXIMATELY 3 FEET AWAY.

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NJDOE SP # 2670-040-19-1000

BUILDING ENTRANCES
SECURITY ENHANCEMENTS

LINDENWOLD SCHOOL 4
900 EAST GIBBSBORO ROAD
LINDENWOLD, NJ 08021

TITLE: HVAC SPECIFICATIONS - MECHANICAL

DRAWING DATE:
26 FEB 2021

REVISION DATE:

DRAWN BY:
EL

COMMISSION NO.:
5643A

SCHOOL 4

M300

4 OF 5

PLUMBING SPECIFICATIONS:

1. SCOPE OF WORK

   A. DOMESTIC WATER PIPING.
   B. SANITARY AND VENT PIPING.
   C. INSULATION.
   D. HANGERS AND SUPPORTS.
   E. VALVES.
   F. CUTTING AND ROUGH PATCHING.
   G. REMOVALS.
   H. EQUIPMENT
   I. SUBMITTALS
   J. PERMITS
   K. WARRANTY
   L. SUPERVISION
   M. RIGGING

2. STANDARDS AND CODES

   A. NEW JERSEY UNIFORM CONSTRUCTION CODE
   B. INTERNATIONAL BUILDING CODE 2018, NEW JERSEY EDITION
   C. NATIONAL STANDARD PLUMBING CODE 2018
   D. INTERNATIONAL FUEL GAS CODE 2018
   E. LOCAL MUNICIPAL UTILITY AUTHORITY
   F. LOCAL WATER COMPANY RULES AND REGULATIONS
   G. OTHER STATE AND LOCAL AUTHORITIES HAVING JURISDICTION

3. MATERIALS:

   A. PIPE AND FITTINGS

      1. PIPE

SERVICE	MATERIAL	SCHEDULE	DESIGNATION
SOIL, WASTE & VENT ABOVE GROUND	NO-HUB CAST IRON	STANDARD WEIGHT	CISPI-30-7B
COLD & HOT WATER ABOVE GROUND	COPPER	TYPE "L"	ASTM B-88

      2. FITTINGS

SERVICE	SIZE	MATERIAL	WEIGHT	TYPE
SOIL, WASTE & VENT ABOVE GROUND	ALL	CAST IRON	STANDARD WEIGHT	NO-HUB ASTM A-48 MG COUPLING ASSEMBLY OR STAINLESS STEEL EQUAL TO CLAMP-ALL
COLD AND HOT WATER ABOVE GROUND	ALL	WROUGHT COPPER	STANDARD	SOLDERED 95/5 TIN & ANTIMONY

      3. DISSIMILAR METALS: PIPE, FITTINGS, HANGERS, ETC. IF DISSIMILAR METALS SHALL BE INSULATED AGAINST DIRECT CONTACT WITH EACH OTHER, BY USING A HIGH QUALITY OR GRADE OF DIELECTRIC MATERIAL.

   B. VALVES

      1. BALL VALVES SHALL BE APOLLO, 77-200 SERIES, FULL PORT, SOLDER END WITH TFE TEFLON SEATS AND SEALS WITH STEEL LEVER HANDLES WITH STOPS.

   C. INSULATION

      1. INSULATE ALL DOMESTIC WATER PIPING, FITTINGS AND VALVES.

      2. PIPE INSULATION

         a. 0.4 LB DENSITY FIBROUS GLASS, ONE-PIECE MOLDED SECTIONAL PIPE COVERING, MAXIMUM K FACTOR 0.26 AT 75°F MEAN TEMPERATURE. OWENS-CORNING CORP. OR APPROVED EQUAL.

         b. REPLACE NORMAL INSULATION INSIDE HANGER SHIELDS WITH INCOMPRESSIBLE INSULATING BLOCK INSIDE JACKET, OR USE LONGER SHIELDS AT HANGER.

         c. JACKETS: FIRE RETARDANT ALL SERVICE OR PURPOSE TYPE. LAMINATE OF VINYL COATED WHITE KRAFT FACING, GLASS REINFORCING AND ALUMINUM FOIL.

         d. ADHESIVES AND COATINGS: FOSTER OR APPROVED EQUAL AS FOLLOWS:

            1. ADHESIVES: LAPS, 85-75; SELF SEALING LAPS MAY BE USED.
            2. FITTING, VALVE AND EQUIPMENT COATINGS: COLD WATER, 30-35; HOT WATER, 30-36.

         e. FASTENING DEVICES

            1. WIRE: MINIMUM 16 GAUGE COPPER CLAD ANNEALED STEEL.
            2. TAPE: PRESSURE SENSITIVE.

         f. INSULATION AND JACKETS

            1. HOT & COLD WATER: 1" THICK WITH VAPOR BARRIER JACKET.

         g. FLAME & SMOKE SPREAD

            1. FLAME SPREAD INDEX OF 20 OR LESS
            2. SMOKE DEVELOPED INDEX OF 50 OR LESS

4. HANGERS AND SUPPORTS

   A. HANGERS AND SUPPORTS

      1. SHALL CONFORM TO NATIONAL STANDARD PLUMBING CODE 2018, WITH SEISMIC RESTRAINTS AS REQUIRED FOR NEW CONSTRUCTION UNDER 2018 IBC.
      2. NATURAL GAS PIPING SYSTEM SHALL CONFORM TO THE INTERNATIONAL FUEL GAS CODE 2018. REFER TO TABLE 415.1
      3. PIPE HANGERS SHALL BE SPACED NOT GREATER THAN 10'-0" O.C. WITH 1/2" MINIMUM ROD SIZE.
      4. ALL PIPE HANGERS, SUPPORTS, & HARDWARE SHALL BE GALVANIZED.
      5. PIPE SUPPORTS SHALL BE OF THE FOLLOWING TYPE AND FIGURE NUMBER, MANUFACTURED BY C&P, F&M, GRINNELL, MIRO INDUSTRIES OR APPROVED EQUAL:

         a. BEAM CLAMP:

            1. C&P - FIGURE 268
            2. F&M - FIGURE 282

         b. CLEVIS HANGER:

            1. C&P - FIGURE 100
            2. F&M - FIGURE 239
            3. GRINNELL - FIGURE 260

         c. RIGID TRAPEZE:

            1. C&P - FIGURE 371
            2. GRINNELL - STD. 45

         d. U-BOLT:

            1. C&P - FIGURE 283
            2. F&M - FIGURE 176
            3. GRINNELL - FIGURE 137

         e. RISER CLAMP:

            1. C&P - FIGURE 89 OR 126
            2. F&M - FIGURE 241
            3. GRINNELL - FIGURE 261

         f. DOUBLE-BOLT PIPE CLAMP:

            1. C&P - FIGURE 304
            2. F&M - FIGURE 261
            3. GRINNELL - FIGURE 295

         g. WELDING BEAM ATTACHMENT:

            1. C&P - FIGURE 113B
            2. F&M - FIGURE 751
            3. GRINNELL - FIGURE 66

   B. PIPE SHIELDS

      1. FOR ALL INSULATED PIPE FURNISH CLEVIS HANGERS WITH WELDED SHIELDS AND EQUAL TO C&P, INC., FIG. 100 SH.

5. SUBMITTALS:

   A. SHOP DRAWINGS SHALL BE REQUIRED FOR:

      1. ALL EQUIPMENT, MATERIALS, MEANS & METHODS INTENDED FOR USE UNDER THIS CONTRACT.

   B. PRIOR TO DELIVERY TO JOB SITE, BUT SUFFICIENTLY IN ADVANCE OF REQUIREMENTS NECESSARY TO ALLOW ARCHITECT AMPLE TIME FOR REVIEW, SUBMIT SHOP DRAWINGS OF ALL EQUIPMENT, FIXTURES, MATERIALS, PIPING, SLEEVES, WIRING DIAGRAMS, ETC. AND FURTHER OBTAIN WRITTEN COMMENTS OF "APPROVED" OR "APPROVED AS NOTED" FOR SAME FROM ARCHITECT BEFORE INSTALLING ANY OF THESE ITEMS.

   C. SHOP DRAWINGS SHALL CONSIST OF MANUFACTURER'S CERTIFIED SCALE DRAWINGS, CUTS, OR CATALOGS, INCLUDING DESCRIPTIVE LITERATURE AND COMPLETE CERTIFIED CHARACTERISTICS OF EQUIPMENT, FIXTURES, ETC. SHOWING DIMENSIONS, CAPACITY, CODE REQUIREMENTS, MOTOR AND DRIVE TESTING, AS INDICATED IN THE CONTRACT DOCUMENTS.

   D. CERTIFIED PERFORMANCE CURVES FOR ALL PUMPING EQUIPMENT SHALL BE SUBMITTED FOR REVIEW.

   E. SAMPLES, DRAWINGS, SPECIFICATIONS, CATALOGS, ETC., SUBMITTED FOR REVIEW SHALL BE PROPERLY LABELED INDICATING PROJECT NAME, AND SPECIFIC SERVICE FOR WHICH MATERIAL OR EQUIPMENT IS TO BE USED.

   F. FAILURE TO SUBMIT SHOP DRAWINGS IN AMPLE TIME FOR CHECKING SHALL NOT ENTITLE AN EXTENSION OF CONTRACT TIME, AND NO CLAIM FOR EXTENSION BY REASON OF SUCH DEFAULT SHALL BE ALLOWED.

   G. PRIOR TO SUBMISSION OF SHOP DRAWINGS CONTRACTOR SHALL THOROUGHLY CHECK EACH SHOP DRAWING, REJECT THOSE NOT CONFORMING TO THE SPECIFICATIONS, AND INDICATE BY SIGNED, WRITTEN DECLARATION THAT THE SHOP DRAWINGS SUBMITTED MEET CONTRACT REQUIREMENTS.

   H. THE COMMENT "APPROVED" OR "APPROVED AS NOTED" RENDERED ON SHOP DRAWINGS SHALL NOT BE CONSIDERED AS A GUARANTEE OF MEASUREMENTS OR BUILDING CONDITIONS. WHERE DRAWINGS ARE REVIEWED, SAID REVIEW DOES NOT IN ANY WAY RELIEVE THE RESPONSIBILITY, OR NECESSITY, OF FURNISHING MATERIAL OR PERFORMING WORK AS REQUIRED BY THE CONTRACT DRAWINGS AND SPECIFICATIONS.

   I. "APPROVED AS NOTED" MEANS, UNLESS OTHERWISE NOTED ON THE DRAWINGS, TO APPROVE FOR CONSTRUCTION, FABRICATION, AND/OR MANUFACTURE SUBJECT TO THE PROVISION THAT THE WORK SHALL BE CARRIED OUT IN COMPLIANCE WITH ALL ANNOTATIONS AND/OR CORRECTIONS INDICATED ON THE SHOP DRAWINGS AND IN ACCORDANCE WITH THE REQUIREMENTS OF THE CONTRACT DOCUMENTS.

      1. WHERE THE COMMENT "APPROVED AS NOTED" INCLUDES DIRECTION TO THE CONTRACTOR TO RESUBMIT CORRECTED SHOP DRAWING FOR RECORD, FAILURE TO COMPLY WITH THE INSTRUCTION TO RESUBMIT RECORD COPY SHALL RENDER THE APPROVAL NULL AND VOID.

6. PERMITS & FEES:

   A. CONTRACTOR SHALL ACQUIRE ALL PERMITS AND PAY ALL FEES REQUIRED FOR THE EXECUTION OF THIS CONTRACT.

7. WARRANTY:

   A. CONTRACTOR SHALL:

      1. UNCONDITIONALLY WARRANTY HIS WORK TO BE FREE OF DEFECTS IN MATERIALS AND WORKMANSHIP FOR A PERIOD TWO (2) YEARS FROM THE DATE OF FINAL ACCEPTANCE BY THE OWNER.
         a. ANY DEFECTS SHALL BE REPAIRED OR REPLACED AS DIRECTED BY THE OWNER AT NO ADDITIONAL COST.
      2. ALL EQUIPMENT SHALL CARRY THE ORIGINAL MANUFACTURER'S WARRANTY AS SPECIFIED IN THE MANUFACTURER'S WARRANTY DOCUMENTATION PROVIDED WITH THE EQUIPMENT. WARRANTY PERIOD SHALL BE CALCULATED FROM THE DATE OF FINAL ACCEPTANCE BY THE OWNER.
         a. ANY DEFECTS SHALL BE REPAIRED OR REPLACED AT THE DISCRETION OF THE MANUFACTURER.
         b. MANUFACTURERS SHALL HAVE MINIMUM 15 YEARS EXPERIENCE IN THE US MARKET.

8. EXECUTION:

   A. CONCEALED PIPING

      1. ALL PIPING INSTALLED IN FINISHED AREAS SHALL BE COMPLETELY CONCEALED WITHIN HUNG CEILINGS, FURRING, SOFFITS, PIPE SPACES, ETC.
      2. WHERE COMPLETE CONCEALMENT IS IMPOSSIBLE BECAUSE OF OBSTRUCTIONS SUCH AS BEAMS, DUCTS, LIGHTS, PIPING, ETC., DO NOT INSTALL ANY WORK BEFORE FIRST CONSULTING WITH THE ARCHITECT, AND HIS INSTRUCTIONS (WRITTEN OR ON REVISED DRAWINGS) SHALL BE FOLLOWED.
      3. ALL PIPING, ETC. SHALL BE COMPLETELY TESTED AND APPROVED BY ALL AUTHORITIES HAVING JURISDICTION BEFORE ANY CONCEALMENT BEGINS.
      4. ALL VENT PIPING SHALL BE SLOPED BACK TO DRAINAGE SYSTEM.
      5. ALL BACKFLOW PREVENTION DEVICES SHALL INCLUDE STRAINER AND AND ISOLATION VALVES UNLESS OTHERWISE INDICATED. ALL BACKFLOW PREVENTION DEVICES SHALL BE TESTED IN ACCORDANCE WITH CODE UPON INSTALLATION.
      6. PROVIDE ACCESS PANELS IN NON ACCESSIBLE CEILINGS AND WALLS FOR ALL VALVES, SHOCK ABSORBERS, CLEAN OUTS, AND ALL OTHER ITEMS THAT REQUIRE ACCESS TO PROPERLY MAINTAIN OR SERVICE. ACCESS PANEL TYPE AND LOCATION SHALL BE APPROVED BY ARCHITECT PRIOR TO INSTALLATION.

9. ALTERATION WORK

   A. ALL EQUIPMENT, PIPING, PLUMBING FIXTURES, ETC. TO BE REMOVED SHALL BE DISPOSED OF, TURNED OVER TO OWNER OR SALVAGED AS DIRECTED. THEY SHALL NOT BE REMOVED FROM THE PREMISES WITHOUT APPROVAL.

   B. ALL PIPING TO BE REMOVED SHALL BE PROPERLY PLUGGED OR CAPPED SO THAT, UPON COMPLETION OF ALL NEW WORK, ALL ABANDONED PIPING SHALL BE CONCEALED IN FINISHED AREAS.

   C. NO DEAD ENDS SHALL BE LEFT ON ANY PIPING UPON COMPLETION OF JOB.

   D. EXISTING EXPOSED PIPING NOT REUSED AND NOT SPECIFICALLY NOTED OR SHOWN ON DRAWING TO BE ABANDONED SHALL BE COMPLETELY REMOVED.

   E. THE EXISTING SYSTEM SHALL BE LEFT IN PERFECT WORKING ORDER UNTIL COMPLETION OF ALL NEW WORK.

   F. LOCATIONS AND SIZES OF EXISTING PIPING ARE APPROXIMATE. EXACT SIZES AND LOCATIONS OF ALL EXISTING PIPING SHALL BE VERIFIED ON THE JOB.

   G. NO REMOVED EXISTING PIPING, ETC. SHALL BE REUSED.

   H. DO NOT INTERRUPT ANY OF THE SERVICES OF THE EXISTING BUILDING, NOR INTERFERE WITH THE SERVICES IN ANY WAY WITHOUT EXPRESS PERMISSION OF THE OWNER. SUCH INTERRUPTIONS AND INTERFERENCES SHALL BE MADE AS BRIEF AS POSSIBLE AND ONLY AT THE DESIGNATED TIMES.

   I. UNDER NO CIRCUMSTANCES SHALL WORKMEN BE PERMITTED TO USE ANY PART OF THE BUILDING AS A SHOP, EXCEPT PARTS DESIGNATED FOR SUCH PURPOSES.

   J. REROUTE OR REMOVE ALL EXISTING PIPING EXPOSED TO VIEW WHERE NECESSARY TO AVOID NEW EQUIPMENT, STRUCTURAL OR MASONRY WORK AS REQUIRED BY THE PROPOSED ALTERATIONS.

10. TESTING

   A. FURNISH ALL TESTING INSTRUMENTS, GAUGES, PUMPS, AND ALL OTHER EQUIPMENT NECESSARY TO PERFORM TESTS.

   B. ALL TESTS SHALL BE MADE IN THE PRESENCE OF THE REPRESENTATIVES OF THE ARCHITECT, THE OWNER AND THE PLUMBING INSPECTOR. GIVE NOT LESS THAN 5 DAYS NOTICE.

   C. TEST

      1. DRAINAGE AND VENT PIPING: TEST WITH WATER AT 10 FT. HD.
      2. DOMESTIC WATER: TEST WITH WATER AT 125 PSI.

11. DISINFECTION OF DOMESTIC WATER PIPING

   A. SHALL CONFORM WITH NATIONAL STANDARD PLUMBING CODE 2018, NJ EDITION

      1. FLUSHING
         a. THE DOMESTIC WATER SYSTEM FROM UPSTREAM OF POINTS OF NEW CONNECTION TO NEW, RELOCATED, AND/OR EXISTING FIXTURES SHALL BE FLOWED UNTIL WATER RUNS FREE AND CLEAR OF DEBRIS AND/OR PARTICLES.
         b. FAUCET AERATORS OR SCREENS SHALL BE REMOVED DURING FLUSHING OPERATIONS.
      2. DISINFECTING
         a. DISINFECT THE ENTIRE DOMESTIC COLD AND HOT WATER SYSTEM IN ITS ENTIRETY AFTER FLUSHING AND PRIOR TO USE.
         b. ALL WATER OUTLETS SHALL BE POSTED TO WARN AGAINST USE DURING DISINFECTION OPERATIONS.
         c. DISINFECTION SHALL BE PERFORMED BY PERSONS EXPERIENCED IN SUCH WORK.
         d. THE WATER SUPPLY TO THE DOMESTIC HOT AND COLD WATER SYSTEM SHALL BE VALVED OFF FROM THE NORMAL WATER SOURCE TO PREVENT INTRODUCTION OF DISINFECTING AGENTS INTO A PUBLIC WATER SUPPLY.
         e. THE DOMESTIC COLD AND HOT WATER SYSTEM SHALL BE DISINFECTED WITH A WATER-CHLORINE SOLUTION.
         f. DURING THE INJECTION OF THE DISINFECTING AGENT INTO THE PIPING, EACH OUTLET SHALL BE FULLY OPENED SEVERAL TIMES UNTIL A CONCENTRATION OF NOT LESS THAN 50 PARTS PER MILLION OF CHLORINE IS PRESENT AT EVERY OUTLET.
         g. THE SOLUTION SHALL BE ALLOWED TO STAND IN THE PIPING FOR NOT LESS THAN 24 HOURS.
         h. UPON EXPIRATION OF THE RETENTION TIME, CONCENTRATION OF CHLORINE AT EVERY OUTLET SHALL BE NO LESS THAN 5 PARTS PER MILLION.
         i. IF THE CONCENTRATION OF CHLORINE IS LESS THAN 5 PARTS PER MILLION AT THE EXPIRATION OF RETENTION TIME THE PROCEDURE SHALL BE REPEATED UNTIL THE REQUIRED MINIMUM RESIDUAL CHLORINE LEVEL IS OBTAINED AT EVERY OUTLET.

12. PIPE INSTALLATION

   A. MODIFY PIPING INSTALLATION TO SUIT BUILDING CONDITIONS AND TO AVOID INTERFERENCES WITH OTHER TRADES, MAINTAINING ACCESS TO ALL PARTS OF THE PIPING SYSTEMS AND DUCTWORK AND TO MAINTAIN PROPER PITCH.

   B. RUN PIPING GENERALLY PARALLEL TO THE AXIS OF THE BUILDING, ARRANGED TO CONFORM TO THE BUILDING REQUIREMENTS AND TO SUIT THE NECESSITIES OF CLEARANCE OF DUCTS, FLUES, CONDUITS AND WORK OF OTHER TRADES AND CLOSE TO CEILING OR OTHER CONSTRUCTION AS PRACTICAL, FREE OF TRAPS OR BENDS.

   C. PROVIDE ADDITIONAL OFFSETS, FITTINGS, VALVES, DRAINS, ETC. WHERE REQUIRED BY CONSTRUCTION AND WORK OF OTHER TRADES.

   D. RUN IN CHASES, RECESSES, SHAFTS, HUNG CEILINGS AND BEAM CUTS WHERE APPLICABLE. DO NOT COVER BEFORE EXAMINATION AND TESTING. NO PIPING IN FLOOR FILL UNLESS NOTED OR APPROVED.

   E. RUN PARALLEL WITH OR AT RIGHT ANGLES TO WALLS AND OTHER PIPING, NEATLY SPACED AND WITH PLUMB RISERS. MAINTAIN MAXIMUM HEADROOM.

   F. PROVIDE REDUCING FITTINGS FOR CHANGES IN PIPE SIZE. NO BUSHINGS ARE PERMITTED.

   G. RUN WATER PIPING FREE OF TRAPS. GRADE AND VALVE FOR COMPLETE CONTROL AND DRAINAGE OF SYSTEM.

   H. VALVES SHALL NOT BE INSTALLED WITH THE OPERATING HANDLE POINTING DOWNWARD.

   I. MANUFACTURER'S NAMEPLATE, NAME OR TRADEMARK, SHALL BE PERMANENTLY AFFIXED TO ALL EQUIPMENT AND MATERIAL FURNISHED UNDER THIS SPECIFICATION. WHERE SUCH EQUIPMENT IS IN A FINISHED OCCUPIED SPACE, THE NAMEPLATE SHALL BE IN A CONCEALED BUT ACCESSIBLE LOCATION. THE NAMEPLATE OF A SUBCONTRACTOR OR DISTRIBUTOR WILL NOT BE ACCEPTABLE.

   J. PROVIDE FOR EACH ITEM OF EQUIPMENT, INCLUDING PANELBOARDS, DISCONNECTS, BREAKERS, STARTERS, SWITCHES, AND ALL CONTROL DEWCES, PUMPS, FANS, COMPRESSORS, BOILERS, ETC., A PERMANENTLY ATTACHED NAMEPLATE MADE OF BLACK SURFACE, WHITE CORE FURNISHING EQUIPMENT SHALL PROVIDE NAMEPLATE. PNEUMATIC, ELECTRIC AND MECHANICALLY ACTUATED GAUGES SHALL HAVE A BRIEF, BUT COMPLETE DESCRIPTION OF THEIR FUNCTION. STATING THE AIR PRESSURE OR VOLTAGE RANGE ALONE IS NOT ACCEPTABLE. NAMEPLATES SHALL BE A MINIMUM OF 3" LONG BY 1-1/2" WIDE AND SHALL BEAR THE EQUIPMENT NAME AND ITEM NUMBER OF 1/2" HIGH WHITE LETTERS AS DESIGNATED IN THE EQUIPMENT SCHEDULE. MOUNTING SCREWS SHALL HAVE CHROME PLATED ACORN HEADED SCREWS.

   K. FURNISH AND ATTACH TO EACH VALVE AS HEREINAFTER SPECIFIED, A 1-1/2" DIAMETER BRASS TAG WITH 1/2" INDENTED NUMERALS FILLED WITH DURABLE BLACK COMPOUND. TAGS SHALL BE SECURELY ATTACHED TO STEMS OF VALVES WITH COPPER WIRE AND "S" HOOKS.

      1. VALVE TAG SCHEDULE

SERVICE	TAG DESIGNATION
COLD WATER	CW
HOT WATER	HW _ DEG. F

   L. CONTRACTOR SHALL MODIFY OWNER'S EXISTING VALVE CHARTS & BOOK TO REFLECT ALL CHANGES MADE UNDER THIS CONTRACT.

   M. PROVIDE TAGS FOR THE FOLLOWING VALVES:

      1. ZONE CONTROL, BYPASS, SHUT OFF, CHECK AND BALANCING VALVES.
      2. BUILDING AND AREA SHUT OFF AND BALANCING VALVES.
      3. CONTROL, BY PASS, SHUT OFF, BALANCING AND DRAIN VALVES FOR MAJOR PIECES OF EQUIPMENT SUCH AS BOILERS, DOMESTIC HOT WATER HEATERS, HEAT EXCHANGERS, REFRIGERATION MACHINES, PUMPS, HEATING, VENTILATING AND AIR CONDITIONING UNITS, COOLING TOWERS, ETC.
      4. SYSTEM DRAIN VALVES, SAFETY AND RELIEF VALVES.

   N. IDENTIFICATION SHALL BE IN ACCORDANCE WITH "SCHEME FOR IDENTIFICATION OF PIPING SYSTEM ANSI A13.1" AND OSHA SAFETY COLOR REGULATION.

   O. MARKERS SHALL BE SNAP ON TYPE AS MANUFACTURED BY SETON NAMEPLATE CORP., NEW HAVEN, CONN. (SETMARK SYSTEM), BUNTING STAMP CO. INC., PITTSBURGH, P.A. OR APPROVED EQUAL. MARKERS SHALL COMPLETELY ENCIRCLE THE PIPE WITH A SUBSTANTIAL OVERLAP. NO ADHESIVE SHALL BE USED. THEY SHALL BE MANUFACTURED OF U.L. APPROVED, SELF EXTINGUISHING PLASTIC. WHEN THE PIPE INCLUDING INSULATION (IF ANY) IS LARGER THAN 6" DIAMETER AND LARGER, MARKERS SHALL BE STRAP ON TYPE.

   P. WHERE PIPE IS TO BE LEFT BARE IT SHALL BE PAINTED WITH TWO (2) COATS OF SELF-PRIMING, MARINE-GRADE SILOXANE EPOXY PAINT IN GLOSS COLORS AS REQUIRED BY ITEM Q, BELOW, AND STENCIL AND VALVE TAG SCHEDULE.

      1. COLOR SPECIFICATIONS:

COLOR	NAME	FEDERAL STANDARD NUMBER
WHITE	INSIGNIA WHITE	17875
BLACK	OSHA SAFETY BLACK	17038
RED	OSHA SAFETY RED	11120
YELLOW	OSHA SAFETY YELLOW	13591
GREEN	OSHA SAFETY GREEN	14120
BLUE	OSHA SAFETY BLUE	15102
ORANGE	OSHA SAFETY ORANGE	12300
PURPLE	OSHA SAFETY PURPLE	17142
BROWN	NASA SAFETY BROWN	10080
GREY	MECHANIC GREY	16187

   Q. PIPE SHALL BE LETTERED AND VALVES TAGGED IN ACCORDANCE WITH THE SCHEDULE BELOW. LETTERING SHALL BE LOCATED NEAR EACH VALVE AND BRANCH CONNECTION AND AT INTERVALS OF NOT OVER 40' (10' ON FIRE LINES) ON STRAIGHT RUNS OF PIPE. PROVIDE FLOW ARROWS FOR ALL PIPING AT EACH MARKER. ADJACENT TO THE LEGEND, STENCIL THE SIZE OF THE PIPE. LETTER COLORS ARE AS FOLLOWS:

      1. WHITE WITH BLACK LETTERING
      2. BLACK WITH WHITE LETTERING
      3. RED WITH WHITE LETTERING
      4. YELLOW WITH BLACK LETTERING
      5. GREEN WITH WHITE LETTERING
      6. BLUE WITH WHITE LETTERING
      7. ORANGE WITH BLACK LETTERING
      8. PURPLE WITH WHITE LETTERING
      9. BROWN WITH WHITE LETTERING
      10. GREY WITH WHITE LETTERING

   R. STENCIL AND VALVE TAG SCHEDULE

SERVICE	STENCIL DESIGNATION	COLOR	TAG DESIGNATION
DOMESTIC COLD WATER	DOMESTIC COLD WATER	GREEN	CW
WASTE PIPING	WASTE	GREEN	<NONE>
VENT PIPING	VENT	GREEN	<NONE>

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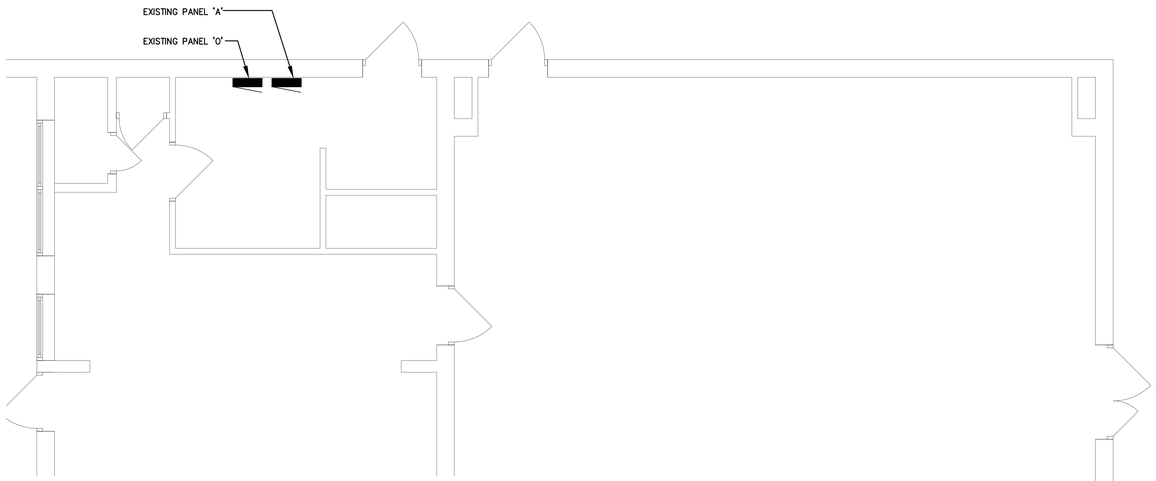
SCHOOL 4
M301
5 OF 5

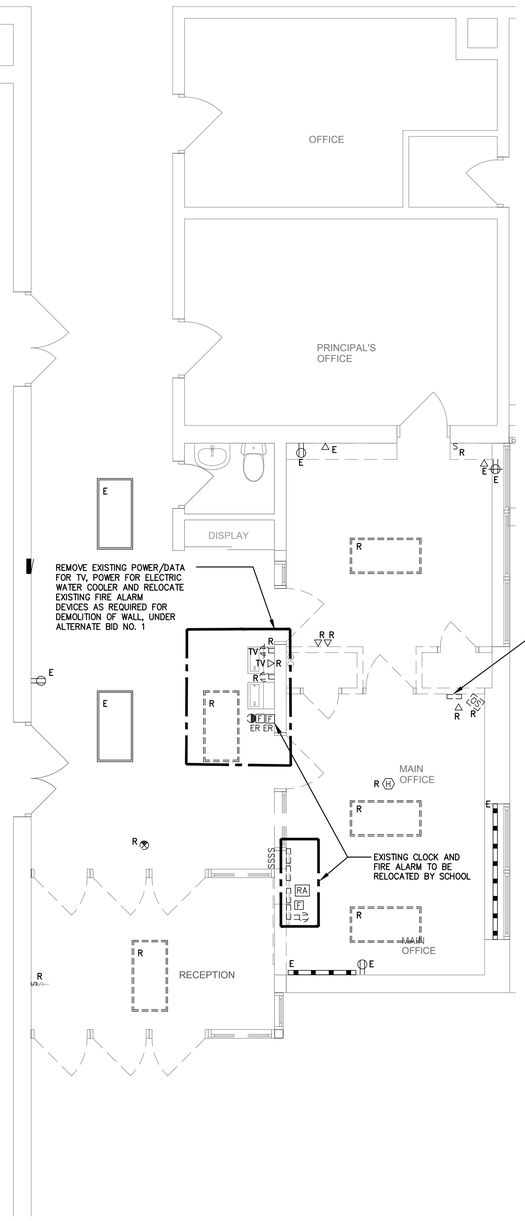


SYMBOL LIST & ABBREVIATIONS

LIGHT FIXTURE – SEE LIGHTING FIXUTRE SCHEDULE	
LIGHT FIXTURE CONNECTED TO EMERGENCY LIGHTING INVERTER	
EXIT SIGN – SEE LIGHTING FIXTURE SCHEDULE	
OS — OCCUPANCY SENSOR – LETTER DENOTES TYPE OF SENSOR TO BE INSTALLED WATTSTOPPER OR APPROVED EQUAL, REFER TO AUTOMATIC LIGHTING CONTROL NOTES. PROVIDE ALL HARDWARE AND PROGRAMMING AS REQUIRED. CI = CI-300 PASSIVE INFRARED SENSOR	
PP — POWER PACK TRANSFORMER AND RELAY, OUTPUT RELAYS RATED 20A BALLAST OR INCANDESCENT, PROVIDE QUANTITY OF RELAYS AS REQUIRED, REFER TO AUTOMATIC LIGHTING CONTROL NOTES.	
EL — EMERGENCY LIGHTING INVERTER – BODINE EL1-S-20	
GFI — DUPLEX RECEPTACLE, 20A, 125V, 2 POLE, U-GROUND SLOT, GFI INDICATES GROUND FAULT INTERRUPTION	
DUPLEX RECEPTACLE MOUNTED ABOVE COUNTER HEIGHT	
SURFACE MOUNTED RACEWAY	
S — SINGLE POLE SWITCH	
S_M — MANUAL MOTOR STARTER	
UNFUSED DISCONNECT SWITCH	
208/120V PANELBOARD	
MOTOR	
FACP — FIRE ALARM, CONTROL PANEL	
RA — FIRE ALARM, REMOTE ANNUNCIATOR PANEL	
F — FIRE ALARM, MANUAL PULL STATION	
H — FIRE ALARM, HEAT DETECTOR FIXED TEMPERATURE AND RATE-OF-RISE	
FIRE ALARM, SMOKE DETECTOR PHOTOELECTRIC	
F — FIRE ALARM AUDIO/VISUAL DEVICE	
FIRE ALARM, VISUAL DEVICE	
PS — POWERSUPPLY (FOR ACCESS CONTROL DEVICES)	
WIRE & CONDUIT, CONCEALED IN CEILING OR WALL	
HOMERUN TO PANEL, NUMERAL INDICATES CIRCUIT NUMBER	
CONNECTION TO EQUIPMENT	
AC — AIRCONDITIONER	
AFF — ABOVE FINISHED FLOOR	
CU — CONDENSING UNIT	
E — EXISTING TO REMAIN	
EF — EXHAUST FAN	
R — EXISTING TO BE RELOCATED	
ER — EXISTING TO BE REMOVED	
RL — RELOCATE EXISTING TO THIS LOCATION, COORDINATE EXACT LOCATION IN FIELD, PROVIDE NEW WIRING TO EXTEND EXISTING WIRING AS REQUIRED, MATCH EXISTING WIRING TYPE AND SIZE	
WP — WEATHERPROOF	

GENERAL NOTES:

1. THE DISTRICT WILL BE RESPONSIBLE TO REMOVE AND RELOCATE ALL EXISTING FIRE ALARM DEVICES, TIME CLOCKS, PHONE LINES, BURGLAR ALARMS, SECURITY/TV, ETC.
2. THE CONTRACTOR FOR THE VESTIBULE–BID WORK WILL PROVIDE THE ELECTRIFIED DOOR HARDWARE AS PART OF THE NEW DOORS AND STOREFRONTS, HOWEVER THE DISTRICT'S SECURITY VENDOR WILL BE REQUIRED TO WIRE THE HARDWARE BACK TO THEIR AIPHONE OR OTHER METHOD OF RETRACTING THE DOOR LOCKS.



1 / E100 PARTIAL FLOOR PLAN – ELECTRICAL DEMOLITION

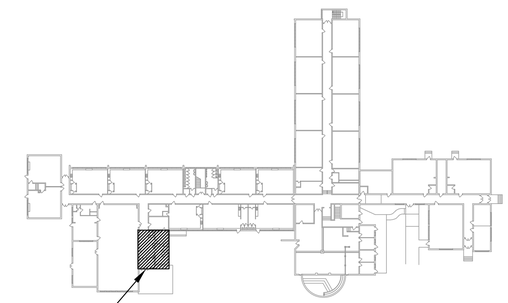
SCALE 1/4" = 1'-0"

NOTE:

1. EXISTING DEVICES ARE PRESENT THAT ARE BEING REMOVED/RELOCATED VIA THE OWNER, THESE ARE NOT SHOWN, REFER TO GENERAL NOTES AND ARCHITECTURAL DRAWINGS, TYPICAL.

DEMOLITION NOTES:

1. THESE DEMOLITION PLANS ARE INTENDED TO BE USED AS A GUIDE TO THE CONTRACTOR. ALL DEMOLITION WORK REQUIRED, OR NECESSARY FOR THE INSTALLATION OF NEW WORK OR THE REMOVAL OF EXISTING EQUIPMENT, IS HEREBY INCLUDED, WHETHER SHOWN ON THESE PLANS OR NOT. REFER TO DRAWINGS OF ALL TRADES FOR ADDITIONAL WORK, AND COORDINATE IN THE FIELD.
2. THE CONTRACTOR SHALL VERIFY ACTUAL SITE CONDITIONS PRIOR TO SUBMITTING HIS BID. THE CONTRACTOR SHALL INCLUDE ALL DEMOLITION WORK NECESSARY FOR THE EFFECTIVE INSTALLATION AND PERFORMANCE OF NEW SYSTEMS. THE CONTRACTOR SHALL ALSO INCLUDE TEMPORARY REMOVAL AND REINSTALLATION OF EXISTING WORK WHEREVER NECESSARY. THE OWNER SHALL NOT ACCEPT EXTRA COSTS ASSOCIATED WITH THE DEMOLITION AND/OR TEMPORARY REMOVAL/REINSTALLATION WORK FROM THE CONTRACTOR.
3. THIS CONTRACTOR SHALL REMOVE ALL LIGHTING FIXTURES AND ELECTRICAL DEVICES AS INDICATED ON THE DEMOLITION PLANS, OR THAT ARE NO LONGER NEEDED BY THE OWNER. ALL EXISTING WIRING AND CONDUIT WHERE NO LONGER REQUIRED SHALL BE REMOVED BACK TO EXISTING PANEL. ALL EXISTING DISCONNECTED CIRCUITS NOT BEING REUSED SHALL BE TURNED OFF AND LABELED "SPARE". WHERE CONDUITS ARE INACCESSIBLE, REMOVE WIRE AND ABANDON CONDUITS.
4. IT IS THE CONTRACTORS RESPONSIBILITY TO VERIFY POWER IS BEING PROVIDED TO ALL EXISTING EQUIPMENT REQUIRED TO REMAIN IN SERVICE. RECONNECT ALL DISTURBED FACILITIES WHICH ARE EXISTING TO REMAIN AND PLACE THEM IN OPERATIONAL CONDITION.
5. REMOVE ALL WIRING DEVICES FROM WALLS TO BE DEMOLISHED. REMOVE EXISTING LIGHT SWITCHES WHERE NO LONGER REQUIRED. REUSE ALL EXISTING CONCEALED CONDUIT AND RECESSED DEVICE BOXES WHERE POSSIBLE. ABANDON BOXES IF THEY ARE IN EXISTING WALLS TO REMAIN. PATCH WALLS OVER ABANDONED BOXES TO MATCH ADJACENT SURFACES.
6. REMOVE ABANDONED OUTLET BOXES, SURFACE METAL RACEWAY AND CONDUIT THAT WOULD BE EXPOSED, AND REPAIR DISTURBED SURFACES TO MATCH ADJACENT AREAS.
7. MAJOR PIECES OF EQUIPMENT ARE TO BE TURNED OVER TO THE OWNER FOR HIS USE, OR AT THE OWNER'S DISCRETION, REMOVED FROM THE SITE AND DISPOSED OF, IF NO LONGER REQUIRED.
8. PATCH ALL WALLS TIGHT AT REMOVALS. MAINTAIN FIRE RATINGS AS REQUIRED.
9. THE CONTRACTOR SHALL REFER TO THE ARCHITECTURAL DRAWINGS FOR THE EXTENT OF WALL FINISHES AND CEILINGS TO BE REPLACED. ALL EXISTING DEVICES TO REMAIN SHALL BE TEMPORARILY DISCONNECTED AND REINSTALLED. WHERE TEMPORARY REMOVAL IS NOT POSSIBLE THE CONTRACTOR SHALL PROVIDE TEMPORARY SUPPORT OF EXISTING EQUIPMENT IN PLACE.
10. THE EXISTING FIRE ALARM SYSTEM SHALL BE MAINTAINED THROUGHOUT DEMOLITION AND CONSTRUCTION. PROVIDE TEMPORARY SUPPORT OF EXISTING DEVICES AS REQUIRED. THE CONTRACTOR SHALL NOTIFY THE FIRE MARSHAL UPON ANY MODIFICATIONS TO OR ANY NECESSARY INTERRUPTION IN SYSTEM OPERATION. NOTE THAT COVERING DEVICES DURING CONSTRUCTION IS AN INTERRUPTION TO COVERAGE.



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PRINT DATE: 1/8/21

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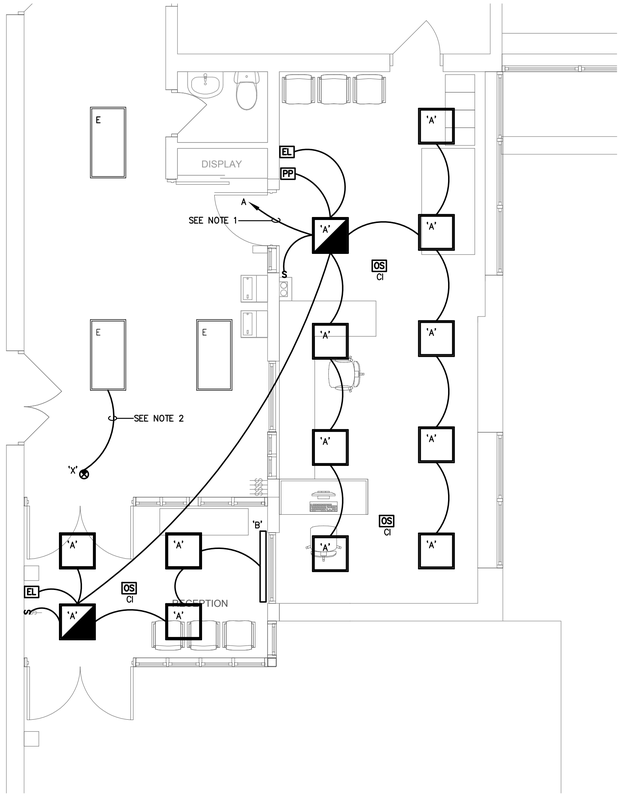
NJDOE SP # 2670-040-19-1000

BUILDING ENTRANCES
SECURITY ENHANCEMENTS
LINDENWOLD SCHOOL 4
900 EAST GIBBSBORO ROAD
LINDENWOLD, NJ 08021

TITLE: PARTIAL FLOOR PLAN & SYMBOL LIST - ELECTRICAL

DRAWING DATE: 26 FEB 2021
REVISION DATE:
DRAWN BY: LA
COMMISSION NO.: 5643A

SCHOOL 4
E100
1 OF 4



1 / E101 PARTIAL FLOOR PLAN – LIGHTING

SCALE 1/4" = 1'-0"

NOTES:

1. PROVIDE AND CONNECT TO NEW 20A/1P CIRCUIT BREAKER, IN EXISTING PANEL, CIRCUIT VIA 2 #12 & 1 #12 GRD – 3/4"C.
2. CONNECT TO EXISTING LIGHTING CIRCUIT IN CORRIDOR, VIA 2 #12 & 1 #12 GRD – 3/4"C

LIGHTING FIXTURE SCHEDULE

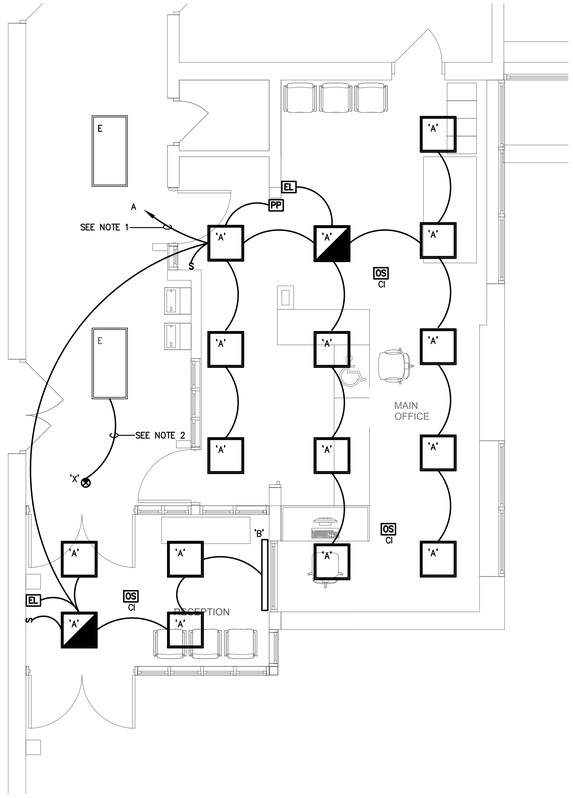
ID	LAMPS	MANUF.	CAT. NO.	MOUNTING	DESCRIPTION
A	(1)–39W LED SPX 35	LITHONIA	CPANL–2X2 24/33/44LM 35K M4	RECESSED	2'x2' LED FLAT PANEL, 120V INPUT
B	LED 30K	FINELITE	HP–4–SM–D–4–S–835–F–96LG–120–SC–FC–10%–XX	SURFACE	4" LONG X 5" HIGH X 4" WDE DOWNLIGHT FIXTURE, 120V INPUT
X	LED	SURE–LITE	CX–7–X–R	WALL/ CEILING	DIE–CAST ALUMINUM EXIT SIGN, WHITE BODY AND FACE WITH 6" x 3/4" RED LETTERS, SINGLE OR DOUBLE FACE AS REQ'D, ARROWS AS SHOWN, INTEGRAL 90 MINUTE BATTERY BACKUP, 120V INPUT

LIGHTING FIXTURE NOTES:

1. ALL FIXTURES SPECIFIED WITH EMERGENCY BACKUP SHALL BE PROVIDED WITH AN ADDITIONAL 120V/1P SIGNAL TO MONITOR NORMAL POWER FAILURE.
2. CONNECT ALL EXIT SIGNS AND EMERGENCY BATTERY PACKS AHEAD OF ALL SWITCHING AND LIGHTING CONTROL.

AUTOMATIC LIGHTING CONTROL NOTES:

1. FURNISH AND INSTALL ALL OCCUPANCY SENSORS AND ACCESSORIES AS RECOMMENDED BY THE MANUFACTURER'S WRITTEN WIRING INSTRUCTIONS.
2. PROVIDE ALL RELAYS, POWER PACKS AND LOW VOLTAGE WIRING AS REQUIRED. COORDINATE QUANTITY OF RELAYS & POWER PACKS IN THE FIELD AND PROVIDE AS REQUIRED.
3. VERIFY ALL OCCUPANCY SENSORS TO BE FURNISHED AND INSTALLED WITH LOW VOLTAGE OR LINE VOLTAGE INPUTS. LINE VOLTAGE OCCUPANCY SENSORS SHALL BE INSTALLED IN PARALLEL FOR THE COMMON CONTROL OF A SINGLE SPACE.
4. THE CONTRACTOR SHALL SET ALL PROGRAMMABLE TIME DELAYS TO A MINIMUM OF 15 MINUTES UNLESS OTHERWISE NOTED. ALL OCCUPANCY SENSORS WITH AN AUTOMATIC SENSITIVITY SETTING SHALL BE SET TO AUTOMATIC UNLESS A REDUCED SENSITIVITY SETTING IS RECOMMENDED BY THE MANUFACTURER OR REQUESTED BY THE OWNER. ALL OCCUPANCY SENSORS WITH A SELECTABLE WALK–THROUGH MODE SHALL BE SET TO THIS MODE.

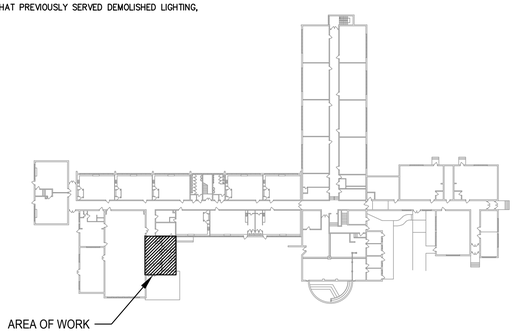


1 / E101 PARTIAL FLOOR PLAN – LIGHTING (ALTERNATE)

SCALE 1/4" = 1'-0"

NOTES:

1. PROVIDE AND CONNECT TO EXISTING CIRCUIT THAT PREVIOUSLY SERVED DEMOLISHED LIGHTING, CIRCUIT VIA 2 #12 & 1 #12 GRD – 3/4"C.



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NJDOE SP # 2670-040-19-1000

BUILDING ENTRANCES
SECURITY ENHANCEMENTS

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LINDENWOLD, NJ 08021

TITLE: PARTIAL FLOOR PLANS & SCHEDULE - LIGHTING

DRAWING DATE: 26 FEB 2021
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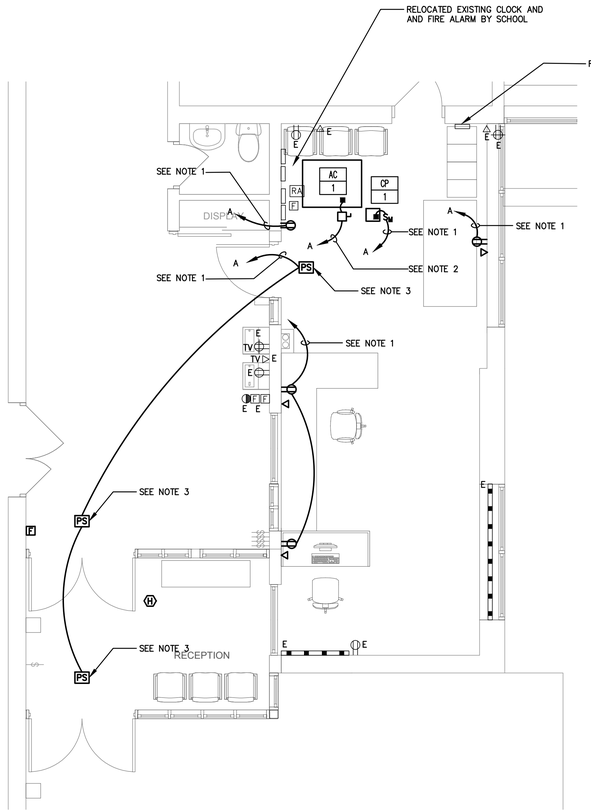
COMMISSION NO.: 5643A

SCHOOL 4

E101

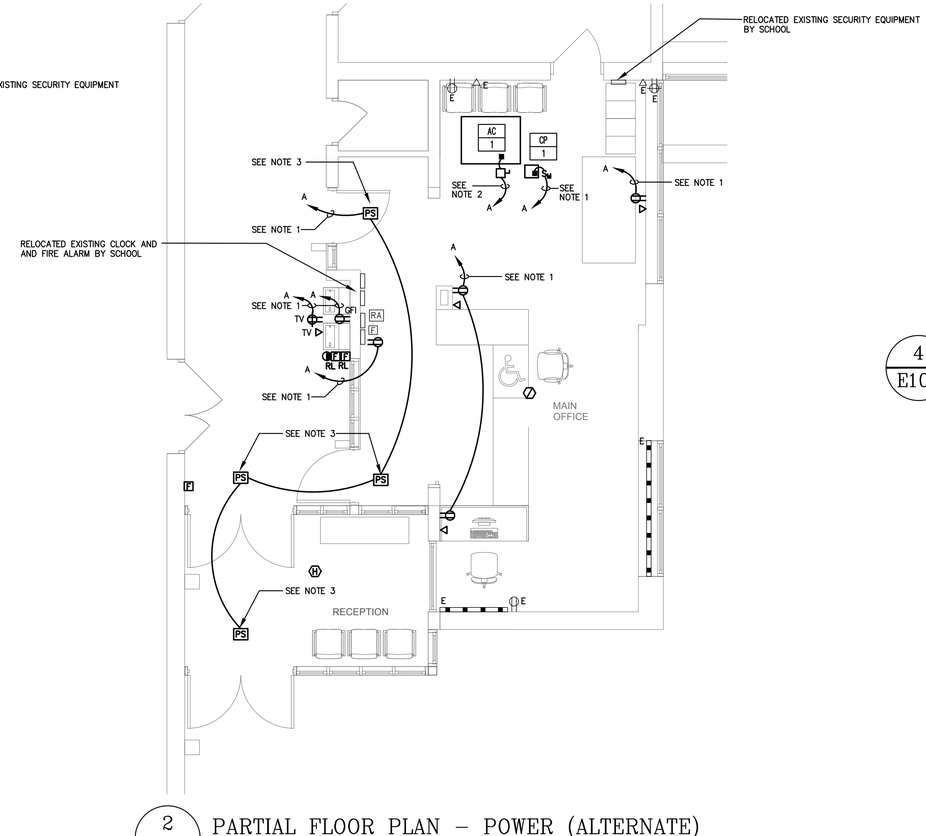


1 / E102 PARTIAL FLOOR PLAN – POWER

SCALE 1/4" = 1'-0"

NOTES:

1. PROVIDE AND CONNECT TO NEW 20A/1P CIRCUIT BREAKER, IN EXISTING PANEL, CIRCUIT VIA 2 #12 & 1 #12 GRD – 3/4"C.
2. PROVIDE AND CONNECT TO NEW 20A/2P CIRCUIT BREAKER, IN EXISTING PANEL, CIRCUIT VIA 2 #12 & 1 #12 GRD – 3/4"C.
3. PROVIDE CONDUIT AND PULLWIRE FROM POWER SUPPLY TO ACCESS CONTROL DEVICES, INCLUDING BUT NOT LIMITED TO CARD READER, INTERCOM, ELECTRIC STRIKE, DOOR CONTACTS AND REQUEST TO EXIT. FIELD COORDINATE WITH SCHOOL'S IT VENDOR. ACCESS CONTROL DEVICES AND WIRING WILL BE BY SCHOOL'S IT VENDOR.

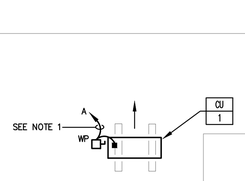


2 / E102 PARTIAL FLOOR PLAN – POWER (ALTERNATE)

SCALE 1/4" = 1'-0"

NOTES:

1. PROVIDE AND CONNECT TO NEW 20A/1P CIRCUIT BREAKER, IN EXISTING PANEL, CIRCUIT VIA 2 #12 & 1 #12 GRD – 3/4"C.
2. PROVIDE AND CONNECT TO NEW 20A/2P CIRCUIT BREAKER, IN EXISTING PANEL, CIRCUIT VIA 2 #12 & 1 #12 GRD – 3/4"C.
3. PROVIDE CONDUIT AND PULLWIRE FROM POWER SUPPLY TO ACCESS CONTROL DEVICES, INCLUDING BUT NOT LIMITED TO CARD READER, INTERCOM, ELECTRIC STRIKE, DOOR CONTACTS AND REQUEST TO EXIT. FIELD COORDINATE WITH SCHOOL'S IT VENDOR. ACCESS CONTROL DEVICES AND WIRING WILL BE BY SCHOOL'S IT VENDOR.

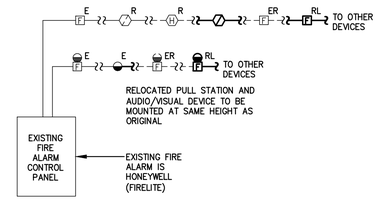


3 / E102 PARTIAL ROOF PLAN – ELECTRICAL

SCALE 1/4" = 1'-0"

NOTES:

1. PROVIDE AND CONNECT TO NEW 20A/2P CIRCUIT BREAKER, IN EXISTING PANEL, CIRCUIT VIA 2 #12 & 1 #12 GRD – 3/4"C.

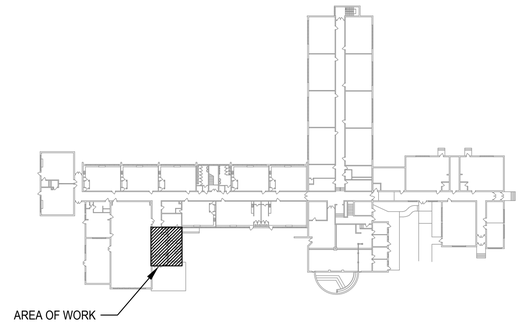


4 / E102 FIRE ALARM SYSTEM RISER DIAGRAM

SCHEMATIC

FIRE ALARM SYSTEM NOTES:

1. PROVIDE ALL WIRING AS RECOMMENDED BY MANUFACTURER. ALL WIRING SHALL MATCH EXISTING.
2. CONTRACTOR IS RESPONSIBLE FOR INSURING THAT FIRE ALARM SYSTEM MODIFICATIONS MEET ALL APPLICABLE CODES AND FOR OBTAINING FINAL APPROVAL FROM LOCAL FIRE INSPECTOR(S).
3. PRIOR TO STARTING WORK, PREPARE SHOP DRAWINGS INCLUDING ALL INFORMATION REQUIRED UNDER IBC–2018, SECTION 907.1.2. SUBMIT SHOP DRAWINGS TO ENGINEER FOR REVIEW AND APPROVAL. ONCE APPROVED, SUBMIT SHOP DRAWINGS TO CODE REVIEWER/INSPECTOR(S) FOR APPROVAL.
4. EXPAND EXISTING FIRE ALARM SYSTEM AS REQUIRED TO CONNECT NEW DEVICES. PROVIDE ALL NEW HARDWARE, RELAYS, MODULES, WIRING, BATTERIES, ETC., AS NECESSARY FOR COMPLETE INSTALLATION.
5. PROVIDE ALL PROGRAMMING BY A FACTORY CERTIFIED VENDOR AS REQUIRED TO MAKE THE NECESSARY MODIFICATION TO THE SYSTEM. INCLUDE ANY HARDWARE, WIRING, OF COMPONENTS NECESSARY FOR CONTINUED REUSE.
6. PROVIDE AT EACH LOCATION SHOWN, AUDIO/VISUAL DEVICES WITH OUTPUT LEVELS AS RECOMMENDED BY MANUFACTURER FOR THE SPACE TO COMPLY WITH ADA & CODE REQUIREMENTS. PROVIDE ADDITIONAL DEVICES TO THOSE SHOWN IF/AS REQUIRED TO MEET LEVELS AT NO ADDITIONAL COST.
7. ALL FIRE ALARM CONTROL PANELS, REMOTE ANNUNICIATORS, AND BOOSTER PANELS SHALL HAVE SMOKE DETECTORS COVERAGE ABOVE. PROVIDE DEVICES WHETHER SHOWN ON PLANS OR NOT.
8. UPON COMPLETION OF FIRE ALARM WORK, PROVIDE A RE–ACCEPTANCE TEST OF THE ENTIRE SYSTEM PER NFPA 72.



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LINDENWOLD, NJ 08021

TITLE: PARTIAL PLANS & DIAGRAM - POWER

DRAWING DATE: 26 FEB 2021
REVISION DATE:
DRAWN BY:
COMMISSION NO.: 5643A

SCHOOL 4

E102

3 OF 4

GENERAL REQUIREMENTS

This Section is coordinate with and complementary to the General Conditions and Special Requirements.

Drawings are diagrammatic. Sizes and locations of equipment are shown to scale where possible, but may be distorted for clarity on the Drawings. Final locations shall be as required or directed.

Light and power and system riser diagrams and schematic diagrams generally indicate equipment and connections to be used for various systems. System conduit and wiring shall be as required. Provide all work shown on diagrams whether or not it is duplicated on the plans.

SCOPE OF WORK

In general the work includes, but is not limited to the following:

1. Raceways and installation components.
2. Wire and Cable.
3. Panelboards (modifications)
4. Safety and disconnect switches.
5. Manual motor starters.
6. Grounding.
7. Lighting fixtures.
8. Electrical provisions for fire and life safety.
9. Fire alarm system (modifications).
10. Testing.
11. Seismic restraints.
12. Furnishing of access doors.
13. Furnishing and setting of all sleeves through the floors, roof, and walls where required, including waterproofing, and fireproof sealing, and cap flashing.
14. Cutting, drilling and boring associated with electrical work.
15. Prime painting, where required for electrical equipment and installation.
16. Final connection of all equipment unless otherwise noted.

QUALITY ASSURANCE AND STANDARDS

The complete installation shall be in accordance with NJUCC (The State Building Code).

Contractor to be responsible for securing all necessary permits and obtaining all necessary approvals. He shall complete all necessary forms and pay all necessary fees.

SUBMITTALS

The Contractor shall submit shop drawings for all systems and components with such promptness as to cause no delay in his own work or that of another contractor.

EXAMINATION OF EXISTING CONDITIONS ON PREMISES

Before submitting his bid, this Contractor shall visit the site of the work and shall thoroughly familiarize himself with the existing conditions affecting the work. By the act of submitting a bid, the Contractor shall be deemed to have made such an examination, to have accepted such conditions, and to have made allowance therefore in preparing his bid. No additional compensation will be granted on account of extra work made necessary by the Contractor's failure to investigate such existing conditions. Verify all grades, elevations, dimensions, and clearances at the site.f

COORDINATION OF WORK WITH OTHER TRADES

The contractor shall coordinate the work of this Section with the work of all other Contracts and all the Utility Companies. It shall be so arranged that there will be no delay in the proper installation and completion of all work.

INSPECTION AND TESTS

The entire wiring system must test free from short and open circuits. Every ground shall be tested for compliance with standards listed below.

PROTECTION, MAINTENANCE AND PRODUCT HANDLING OF ELECTRICAL EQUIPMENT

Electrical equipment shall be delivered and stored at the site, properly packed and crated until finally installed.

Provide effective protection against damage for all material and equipment during shipment and storage at the Project Site.

This Contractor shall be responsible for the maintenance of all installed equipment and systems until final acceptance by the Owner.

GUARANTEE

This Contractor shall guarantee in writing to the Owner that all work installed by him shall be free of defects in workmanship and materials and that all apparatus will develop the capacities and characteristics as indicated, and that, if during a period of two years from date of final approval of work by the Architect, any defects in workmanship, materials or performance appear, he will remedy them without any cost to the Owner.

ACCESSIBILITY AND MEASUREMENTS

All work shall be installed so as to be readily accessible for operation, maintenance, and repair. Minor deviations from the plans may be made to accomplish this, subject to approval.

Before ordering any material or doing any work, the Contractor shall verify all measurements at the Building, and shall be responsible for the correctness of same as related to the work under this Contract.

TEMPORARY LIGHT AND POWER

Electric services for temporary light and power shall be obtained from existing.

The Electrical Contractor shall furnish, install, and maintain the temporary lighting and power system for all Contractors. Provide temporary power for all construction trailers or as directed. The use of electricity shall be kept to a minimum.

The General Contractor will pay for all energy required by the temporary lighting and power system.

Provide all wiring, supports, lamp sockets, receptacle sockets and any other materials, supplies or equipment necessary for temporary light and power system.

Ground fault protection required by OSHA.

Install separate stringer circuits for lighting and receptacles. Provide one lamp socket and one duplex receptacle for every 400 square feet of new general construction area. (Approximately 20 feet on centers).

Provide sufficient supplementary temporary lighting to permit proper execution of the work.

Keep the temporary lighting and power system operational commencing fifteen (15) minutes before the established starting time of that trade which starts work earliest in the morning and ending fifteen (15) minutes after the established quitting time of that trade which stops work latest in the evening.

IDENTIFICATION NAMEPLATES

Identify and mark all electrical equipment to meet OSHA standards and as specified herein.

Unless otherwise noted, nameplates shall be black laminate with white letters of uniform size consisting of reasonably large capital letters, 3/16 inch minimum.

SEISMIC RESTRAINTS

Provide lateral restraints for all electrical equipment installed on project; i.e., Battery racks, ballast racks, cable trays, conduit, generators, lighting fixtures, panels and transformers. Typically, lateral restraints shall consist of angle iron and "uni-strut" bracing, cross bracing, hanger rods, anchor clips, expansion shield anchor bolts, etc. The purpose of the restraints is to provide resistance to lateral (horizontal) movement during earthquake.

All equipment shall be anchored to the floor, ceiling structure or walls.

All suspended equipment, wiring trough and conduit trade size 2-1/2" or larger shall have (lateral) horizontal bracing capable of resisting 50% of the equipment weight. Horizontal bracing shall be placed at each point where vertical supports are specified or required.

All life safety equipment, and conduit shall have lateral bracing capable of resisting 100% of the equipment weight.

Stem mounted fixtures shall have stems and swivel canopies designed for seismic loads. Ceiling outlet boxes and hangers for stem-mounted fixtures shall have lateral bracing capable of withstanding full vertical load. Lateral bracing shall be attached to the ceiling (at an angle) or wall structure.

Recessed and surface mounted light fixtures must be secured to the ceiling system so as to resist 50 % of their weight laterally, i.e. a 40 pound fixture must be resistant to a 20 pound lateral force. Life safety lighting fixture must be secured to the ceiling system so as to re-sit 100% of their weight laterally. Suitable anchor clips must be provided for all lay-in fixtures. Surface mounted fixtures must be supported at two points in addition to the outlet box.

RACEWAYS AND INSTALLATION COMPONENTS

The requirements of this Section apply to raceway work specified elsewhere in these specifications.

The work includes the providing of completely coordinated grounded raceway systems complete with boxes, fittings, flexible connections to vibrating equipment and accessories, as specified and as required for a complete system.

The work permits the use of metal-clad cable in conjunction with conduit. See below.

Raceways and fittings shall be manufactured by Triangle or approved equal by Allied or Republic.

Rigid steel conduit shall be full weight steel pipe, hot dip galvanized inside and outside, threaded, minimum 3/4 inch.

Intermediate metal conduit (IMC) shall be intermediate steel pipe, hot dip galvanized, threaded, minimum 3/4 inch.

Electric metallic tubing (EMT) shall be steel thin wall pipe, galvanized, threadless, minimum 3/4 inch, maximum 2 inch.

Flexible steel conduit (Greenfield) shall be continuous single strip, galvanized, minimum 3/4 inch.

Liquid-tight flexible steel conduit (Seal-tite) shall be zinc coated, consist of flexible galvanized steel tubing over which is extruded a liquid-tight sheathing of polyvinyl chloride (PVC). Conduit shall be provided with a continuous copper bonding conductor would spirally between the convolutions.

Rigid steel and IMC conduit fittings shall be standard threaded couplings, locknuts, bushings, and elbows. Material shall be steel or malleable iron only.

Electrical metallic tubing fittings shall be compression waterproof connection type. Set screw or indent type connectors are not permitted.

Flexible steel conduit (Greenfield) fittings shall be multiple point type, threading into the internal wall of the conduit convolutions, and shall have insulated throat.

Liquid-tight flexible metal conduit fittings shall incorporate a threaded grounding cone, a steel or plastic compression ring, and a gland for tightening. Connectors shall have insulated throats.

Expansion and deflection couplings shall be manufactured by O-Z/Gedney, Crouse-Hinds, Appleton or approved equal.

Individual conduit hangers, shall be designed for the purpose, and have pre-assembled closure bolt and nut, and provisions for receiving hanger rod.

Multiple conduit (trapeze) hangers shall be not less than 1-1/2 by 1-1/2 inch, 12 gauge steel, cold formed, lipped channels. Hanger rods shall be not less than 3/8-inch diameter steel.

Solid masonry and concrete anchors shall be a type approved for the purpose.

Provide and assume responsibility for locating and maintaining in proper position all sleeves required for the work.

Openings through floors and walls in which cables, conduits, or pipe pass shall be sealed by U.L. classified smoke and fire stop fittings, and have an hourly rating equal to the fire rating of the floor or wall. Fittings shall be similar to O-Z/Gedney Type "CFS" or "CAFS".

Penetrations through fire-rated floors in which wiring for floor service outlets are routed shall be sealed by U.L. classified smoke and fire-stop fittings, and shall have an hourly rating equal to the floor rating. Fittings shall be similar to O-Z/Gedney Type "PTFS".

Outlet boxes shall be manufactured by Raco, RussellStoll, Steel City, Thomas & Betts or Crouse Hinds.

Outlet boxes for concealed work shall be galvanized steel, 4 in. square or octagon (except as otherwise required by construction, devices or wiring). Provide sufficient depth for application.

Outlet boxes located outdoors and in damp locations shall be weatherproof.

Offset back-to-back outlets shall have minimum 6 in. separation between them. In rated walls, they are to be separated by a stud

Junction, splice and pull boxes shall be made of code gauge sheet steel with removable covers fastened with brass or stainless steel screws, except as noted, and will include insulated supports for cables. Box dimensions shall conform to N.E.C. requirements.

Provide junction, splice and/or pull boxes as noted or as required to facilitate pulling of conductors or in raceway runs that have more than three (3) 90-degree bends.

For indoor applications, boxes shall have a gray enamel finish. For outdoor and damp locations, boxes shall be galvanized.

Wireways shall be as manufactured by Square D, General Electric, or approved equal.

Wireways shall be square, brake-formed of code gauge steel, furnished in standard 10-foot sections with knockouts as required. Wireways shall be of the screw cover type and all necessary offset and elbow fittings. They shall have a gray enamel finish. Size shall be as required for proper cable fill.

Install raceway and installation components as indicated, in accordance with manufacturer's written instructions, applicable requirements of NEC and in accordance with the recognized industry practices, to ensure that products serve intended function.

Raceway supports shall be provided by means of ceiling trapeze, strap hangers, or wall brackets. Use structural steel angles or channels, or manufactured steel support system. Spacing of supports shall be as per NEC and per manufacturer's recommendations but in no case shall exceed 8'-0" on centers. Provide U-bolts at each floor level for riser raceways and anchor to acceptable supports. Secure raceways to supports with pipe straps or U-bolts.

Mechanically join all metal raceways, enclosures and junction boxes to assure continuity.

Branch circuit conduits shall be supported by the building structure.

Conduits located underground beyond the building for branch wiring shall be installed with a minimum of 30 in. top cover as shown on the drawings.

Provide expansion-deflection fittings at expansion joints in accordance with manufacturer's recommendations. Expansion-deflection fittings shall be used for all trade sizes 1-1/4" or larger. For trade sizes up to 1" in size, a suitable length of flexible conduit (or liquid-tight flexible conduit) with sufficient slack for movement and grounding conductor fastened on each side of joint shall be permitted.

Rigid steel conduit shall be used for underground installation; in wet, damp or wash down locations; for exposed runs on the exterior of the building; embedded in concrete or masonry or below concrete that is in contact with earth.

Intermediate metal conduit (IMC) may be used in place of rigid steel in dry locations only.

EMT is to be used for feeders and branch circuits in dry locations such as hung ceilings, interior hollow block walls and furred spaces.

Flexible steel conduit shall be used in dry locations for short connections where rigid conduits or tubing is impracticable, and for final connections to lights and equipment other than motors and transformers.

Liquid-tight flexible steel conduit shall be used in damp locations for final connections to motor terminal boxes, transformers, and other vibrating equipment in damp and dry locations.

In general, cutting and core drilling is to be avoided. Where it becomes necessary, locations are to be coordinated with other trades, the Owner and the structural engineer. There is to be no cutting or core drilling without prior approval.

Provide an outlet box for each lighting fixture and device shown, or required, in the wiring system.

Provide galvanized steel extension rings (depth as required) and raised cover plates in plaster, dry wall, masonry and tile walls.

Mount outlet boxes for similar equipment at uniform height within same or similar areas.

Outlet boxes for fixtures recessed in non-accessible ceilings shall be accessible through the opening created by the removal of the fixture or through access doors provided by this contractor.

All outlet boxes in finished areas for convenience receptacles or local switches shall be 4" square and 1-5/8" deep minimum. Provide with regular deep switch extension cover.

Boxes for use with surface mounted raceways shall be of the same construction and manufacture as the raceway.

Provide junction, splice and pull boxes where required to facilitate installation of wiring, whether or not shown on Drawings. Size boxes according to code, and provide interior partitions, insulated supports, hot dip galvanized angle iron braces, screw-on one-piece or split covers, ground connectors, and other accessories as required.

All outdoor installations shall be weatherproof.

Support all material from the building structure in an approved manner.

Where electrical equipment is mounted in suspended ceiling panels, provide support members to span between runners of ceiling suspension system. Do not support electrical equipment from acoustical panels or other ceiling material; attach to this material for alignment only.

Where electrical outlet boxes, lighting fixtures, and other equipment is installed on tee bars of suspended ceilings, use independent support clips with threaded studs. Do not attach to tee bar except for alignment; use clip similar to Caddy "IDS" that snaps around tee bar and has provisions for independent support wire. Attach a suitable anchor in the structure above ceiling, and suspend a minimum No. 12 support wire to engage the clip.

Do not exceed manufacturer' load rating for mounting devices.

At drywall partitions, provide support members to carry weight of equipment; do not use drywall material to carry any weight.

WIRE AND CABLE

The work includes providing wire and cable complete with all accessories in accordance with Drawings and Specifications and as required for a complete system. Wiring size referenced in this Section shall be AWG, except as noted

This project has been designed for copper conductors. Aluminum conductors are not acceptable and shall not be used. Cable shall be manufactured by Triangle or approved equal by Carol or Guardian Products.

No. 10 and smaller conductors shall be ASTM Standard, solid, copper; and, No. 8 and larger conductors shall be ASTM standard, stranded copper.

Minimum conductor size shall be No. 12 for lighting and power and No. 14 for control and alarm. Increase wire sizes as required for long runs to overcome voltage drop.

Communications and signal wiring shall conform to the recommendations of the manufacturer's communication and signal systems and shall be specified in respective Sections of these Specifications.

"THWN" or "XHHW" insulation shall be used for interior branch circuit and feeder wiring. Rating shall be 90°C in dry locations and 75°C in wet locations.

Green colored insulated wire shall be used for all grounding applications.

Phase wires shall be color-coded as follows:

1. 120/208 volt system: Black for A phase
   Red for B Phase
   Blue for C Phase

Neutral conductors shall be white for 120/208 volts.

Provide O-Z/Gedney Type "CSB" series or approved equal seal fittings between the wire and conduit for all cable and wire entering the building from underground, including service cables.

Not more than 3 current carrying conductors shall be in one (1) conduit unless otherwise indicated. Provide one neutral conductor for each 3 phase 4 wire homerun to a panelboard unless otherwise noted.

MC cable shall comply with the NEC article 330. MC cable shall be as manufactured by AFC or approved equal by Guardian Products.

MC cable shall include a green insulated ground wire of the same size as the other conductors.

Run MC cable in dry hollow metal partitions and above suspended ceilings. Install cable as slack span; do not pull tight. Maintain at least 6" clearance between parallel runs of light and power wiring to avoid inductive coupling. Maintain at least 24" clearance from hot water and steam piping. Provide conduit sleeves through walls and partitions that obstruct horizontal passage of wiring, and seal sleeves after installation of cables. Cable shall be secured by approved staples, hangers or similar fittings independent of ceiling grids or supports.

MC cable shall be used in conjunction with conduit. Cable shall only be permitted for single phase circuits in hollow metal walls and above accessible ceilings. Single phase cable runs shall be gathered into three phase conduit homeruns. In no case shall cable enter directly into panelboards.

Secure MC cable to ceiling structure at intervals not to exceed 6 feet and within 12 inches of every outlet box, junction box, or fitting.

Make wire splices electrically and mechanically secure. Install small wire connectors so that no bare conductor is exposed. Tighten bolts on large conductor connectors so that conductor is deformed, but do not break strands of wire. Use compression tool with proper die for compression connectors in accordance with manufacturer's recommendations, so that conductors are deformed but not broken. Apply insulation over splice so that insulation thickness is at least 1-1/2 times that on conductor. Lap applied insulation at least 1" over conductor insulation so that no bare conductor is exposed.

In general, all feeders No. 8 and larger shall be continuous from point of origin to equipment being served. Splices shall only be used where necessary and with prior written approval of the Engineer.

Terminate conductors on terminal strips in equipment where terminal strips are used. Provide appropriate connectors, or hook conductors around terminal screws as required.

Provide encapsulated splice kits (3-M type 85 series or approved equal) for all splices in areas subject to moisture, including wet locations inside buildings and underground handholes, manholes, and buried junction boxes. Install splice kit in accordance with manufacturer's recommendations, and make splice waterproof. Apply sealing putty to surround each cable. Install mold body so that resin covers each cable sheath by a minimum of one inch.

All copper conductors No. 8 & larger shall be terminated, spliced, and tapped with color-keyed compression connectors, as manufactured by Thomas & Betts Co., Series 54000, Ideal Industries Series 87000, or approved equal. The manufacturer's recommended tooling shall be used. Mechanical type connectors shall not be used.

All copper conductors No. 10 AWG & smaller shall be terminated and spliced with Ideal Industries wing-nut wire connectors or approved equal compression connectors. The flame-retardant thermoplastic insulated type shall be used to isolate the terminal from other metal parts and equipment.t

Use insulating boots supplied for compression connectors or fill joint with "Scotchfil" insulating putty and serve (3) 1/2 lap layers of "Scotch" #33 electrical tape.

WIRING DEVICES AND INSTALLATION COMPONENTS

All local switches near doors shall be located at strike side of door as finally hung, whether so indicated on the Drawings or not.

Height of outlets from finished floor to centerline of outlet shall be as follows:

Bracket Outlets in corridors: *

Receptacle outlets: 1'-6", unless otherwise noted

Wall switch outlet: 3'-8"

Wall switch outlet at borrowed light: 3'-0"

Wall push button: 3'-8"

Motor controllers: 5'-0"

Safety and disconnect switches: 5'-0"

* The top of the wall device is to be even with the top of the door frame (±7'-0) rough-in outlet box accordingly.

Wiring devices and installation components shall be manufactured by Hubbell, Bryant Electric, Pass & Seymour, Leviton, Cooper Industries-Arrow Hart, or General Electric.

Switches shall be heavy-duty specification grade, toggle, quiet type, fully enclosed in composition cases, color as selected by Architect at shop drawing stage. They shall be rated 20 amp, 120/277 volt, AC.

Receptacles shall be the grounding type, composition base, meeting NEMA standards, publication WD-1-1971, color as selected by Owner.

Duplex Convenience Receptacles shall be 20 amps, 125 volts, 2 pole, 3 wire, U ground slot type, Hubbell No. BR20.

Special purpose Single Receptacles shall be 20 amps, 125 volts, 2 pole, 3 wire, twist-lock type, Hubbell No. 2310.

Ground Fault Interrupter Duplex Receptacles: 20 amps, 125 volts, 2 pole, 3 wire, Hubbell No. GF-5352, with weatherproof cover, Hubbell No. 5221.

Where more than one switch or receptacle is being installed, provide multiple gang plates for number of devices as required.

Plates shall be beveled stainless steel satin chrome finish #302, of minimum .035" thickness.

Manual motor starters shall be Allen Bradley Bulletin 600 or approved equal by Square D or General Electric and shall be horsepower rated, and voltage rated for the motor load.

Wallboard and masonry shall fit snuggly to all sides of outlet boxes, grout and patch as required.

Convenience receptacles shall be mounted with ground pole up, except those mounted above counter levels.

Local wall switches and receptacles shall be mounted vertically unless otherwise indicated.

SAFETY AND DISCONNECT SWITCHES

Switches shall be heavy-duty and service rated. They shall be General Electric Type "TH" or equal by Square D, Cutler Hammer, or Siemens. Switches shall include solid neutral where required. Provide auxiliary contacts where required to break motor control circuit power.

Interior enclosures shall be NEMA 1. Enclosures shall have interlocked doors and be capable of being positively padlocked in ON and OFF positions. For exterior installations, the enclosures shall be NEMA 4.

PANELBOARDS

Panel circuit breaker overcurrent protective devices shall be as scheduled on the Drawings and as specified. All breakers shall be bolted-on thermal magnetic type

Panel circuit breakers shall be rated for 10,000 RMS symmetrical amperes minimum interrupting rating at 120/208 volts. Provide higher ratings as required or as scheduled on the Drawings.

Provide handle-locking attachments for all circuit breakers serving emergency lights, exit lights, clocks, and other functions indicated.

Furnish and install a typewritten circuit directory. Hand written will not be accepted.

PRINT DATE: 1/8/21

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21AI00912100

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NJDOE SP # 2670-040-19-1000

BUILDING ENTRANCES
SECURITY ENHANCEMENTS

LINDENWOLD SCHOOL 4
900 EAST GIBBSBORO ROAD
LINDENWOLD, NJ 08021

TITLE: SPECIFICATIONS - ELECTRICAL

DRAWING DATE: 26 FEB 2021
REVISION DATE:
DRAWN BY: LA
COMMISSION NO.: 5643A

KELTER & GILLIGO
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P.O. BOX 777 14 WASHINGTON RD.
PRINCETON JUNCTION NEW JERSEY 08550

Frank Tindall, P.E.
Professional Engineer
NJ 38656

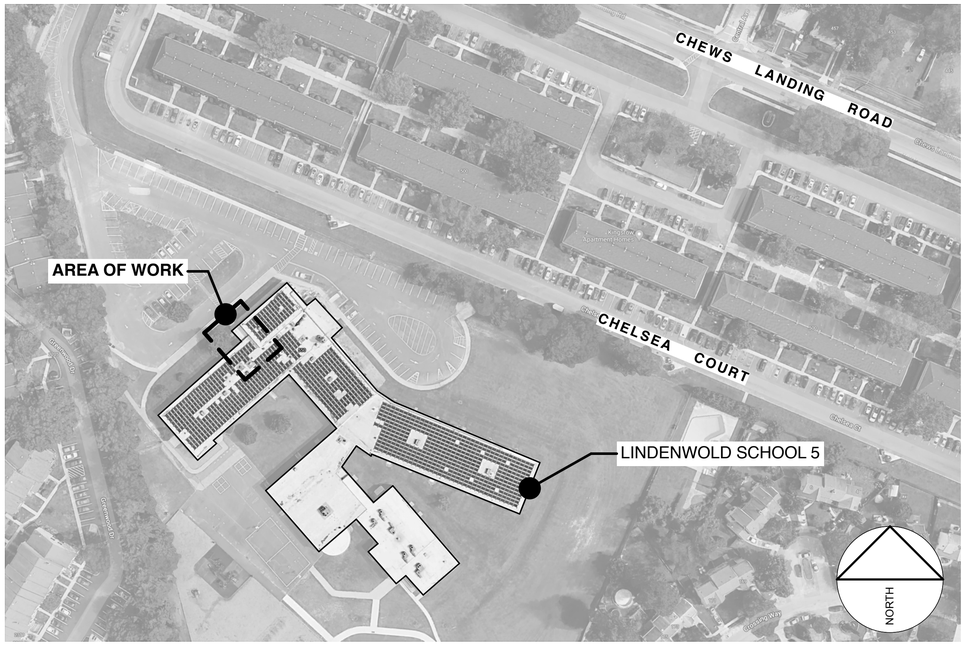
SCHOOL 4

E200

4 OF 4

BUILDING ENTRANCES SECURITY ENHANCEMENT
LINDENWOLD SCHOOL 5

BLOCK 240, LOT 13.02
550 CHEWS LANDING ROAD
LINDENWOLD, NJ 08021
NJDOE STATE PROJECT #2670-050-19-1000



SUBCODES

THE FOLLOWING SUBCODES AS ADOPTED BY THE NEW JERSEY UNIFORM CONSTRUCTION CODE (NJAC 5:23 et seq.) SHALL APPLY TO THIS PROJECT.

SUBCODE	NATIONAL MODEL CODE	UCC REFERENCE
BUILDING	INTERNATIONAL BUILDING CODE NJ ED/2018	NJAC 5:23-3.14
PLUMBING	NATIONAL PLUMBING CODE /2018	NJAC 5:23-3.15
ELECTRICAL	NATIONAL ELECTRICAL CODE /2017	NJAC 5:23-3.16
ENERGY	ASHRAE 90.1-2016	NJAC 5:23-3.18
MECHANICAL	INTERNATIONAL MECHANICAL CODE /2018	NJAC 5:23-3.20
FUEL GAS	INTERNATIONAL FUEL GAS CODE /2018	NJAC 5:23-3.22
REHABILITATION	REHABILITATION SUBCODE RENOVATION 6.5 AND ALTERATION 6.6	NJAC 5:23-6
BARRIER FREE	ICC/ANSI A117.1-2009	NJAC 5:23-7

CONSTRUCTION TYPE: IIB
USE GROUP: E

LIST OF DRAWINGS:

All Contractors shall examine all drawings indicated herein for required coordination between different trades and/or for work included in other sections of the Project Manual that may pertain to their respective contract.

CS COVER SHEET
A100 DEMO & NEW WORK PLANS / DETAILS
A101 REFLECTED CEILING PLAN / DETAILS
A102 ROOF PLAN, ROOF DETAILS & MISC. DETAILS
A103 EGRESS PLAN & SIGNAGE DETAILS

H100 PARTIAL FLOOR PLANS - HVAC
H200 SCHEDULES & DETAILS - HVAC
H300 SPECIFICATIONS - HVAC

E100 PARTIAL FLOOR PLAN & SYMBOLS LIST - ELECTRICAL
E101 PARTIAL FLOOR PLANS - ELECTRICAL
E102 PARTIAL ROOF PLAN, SCHEDULE AND DIAGRAM - ELECTRICAL
E200 SPECIFICATIONS - ELECTRICAL

OWNER:
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LINDENWOLD, NJ 08021
856-783-0276, FAX 856-741-0166

ARCHITECT:
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MPE ENGINEER:
KELTER & GILLIGO CONSULTING ENGINEERS
14 WASHINGTON STREET, SUITE 221
PRINCETON JUNCTION, NJ 08550-1028
609-799-8336, FAX 609-275-9306

GENERAL NOTE:

FOLLOW APPENDIX DOCUMENTS FOR ASBESTOS ABATEMENT REQUIREMENTS

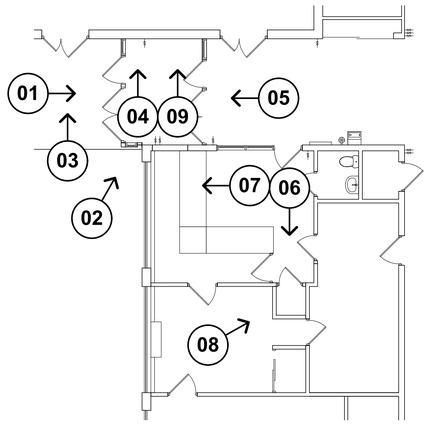
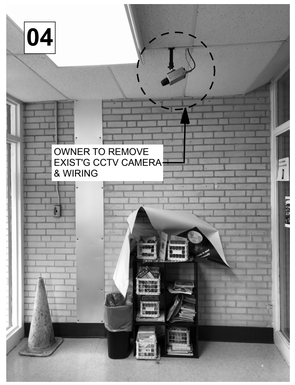
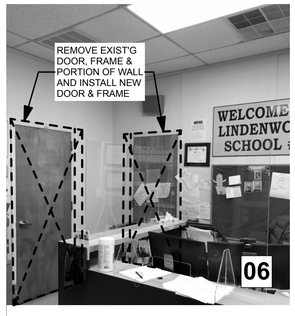
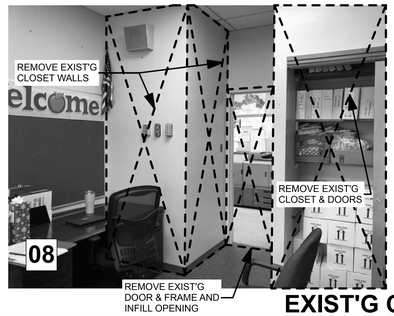
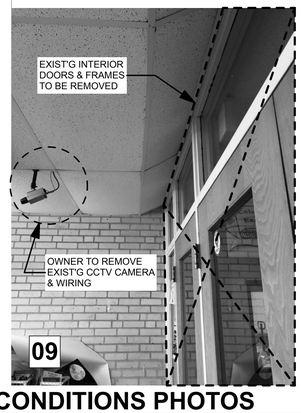


PHOTO LOCATOR PLAN NO SCALE









EXIST'G CONDITIONS PHOTOS

PRINT DATE: 3/12/21

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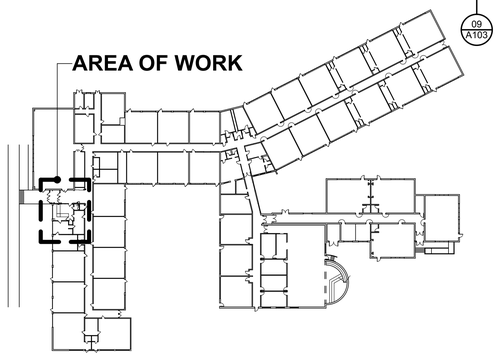
NJDOE SP #2670-050-19-1000
BUILDING ENTRANCES SECURITY ENHANCEMENT
LINDENWOLD SCHOOL 5
550 CHEWS LANDING ROAD
LINDENWOLD, NJ 08021
TITLE: COVER SHEET

DRAWING DATE: 26 FEB 2021
REVISION DATE:
DRAWN BY: PF
COMMISSION NO.: 5643A

SCHOOL 5
CS
1 OF 5

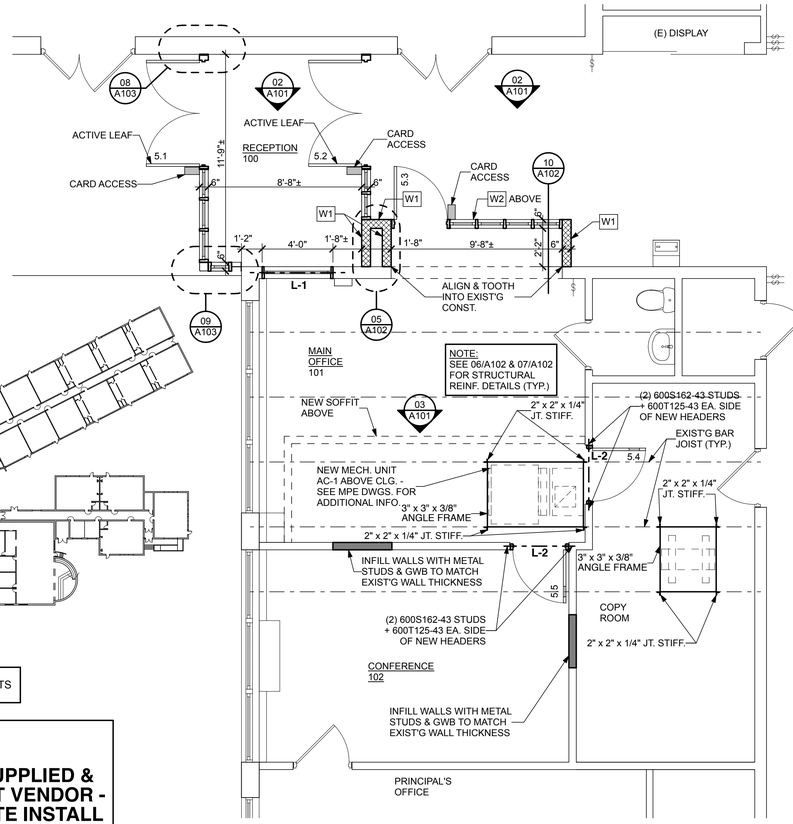


KEY PLAN

NTS

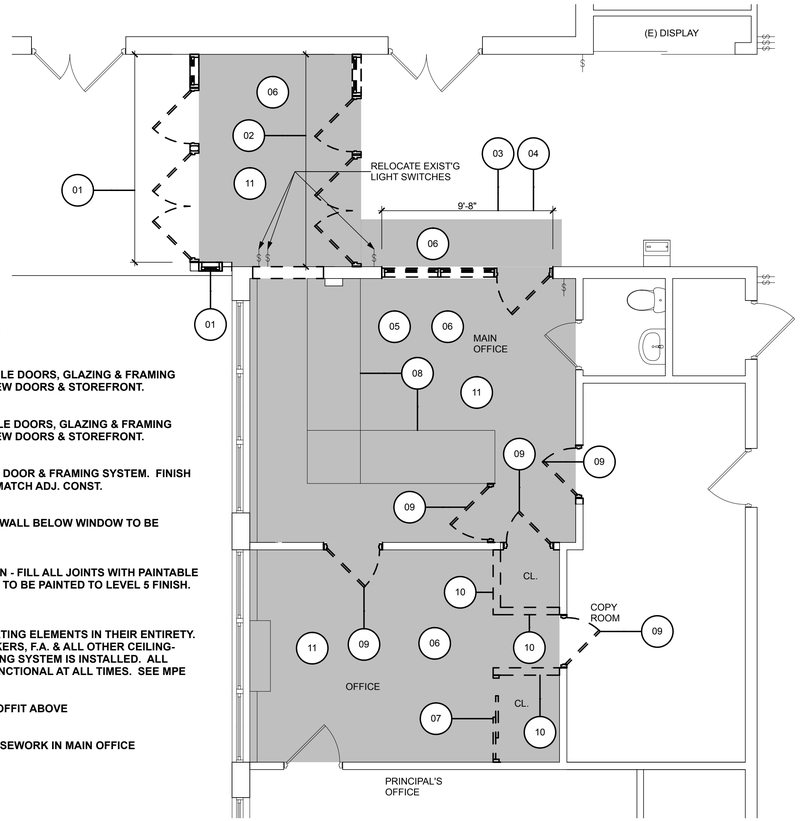
NOTE:

CARD ACCESS SYSTEM SUPPLIED & INSTALLED BY OWNER'S IT VENDOR - G.C. TO FULLY COORDINATE INSTALL WITH IT VENDOR (TYP.)



SCHOOL 5 NEW WORK

SCALE: 1/4" = 1'-0" | 02 | A102



SCHOOL 5 DEMO

SCALE: 1/4" = 1'-0" | 01 | A102

DEMO NOTES:

EXISTING TO BE REMOVED

01 **REMOVE EXIST'G EXTERIOR VESTIBULE DOORS, GLAZING & FRAMING SYSTEM. PREPARE OPENING FOR NEW DOORS & STOREFRONT.**

02 **REMOVE EXIST'G INTERIOR VESTIBULE DOORS, GLAZING & FRAMING SYSTEM. PREPARE OPENING FOR NEW DOORS & STOREFRONT.**

03 **REMOVE EXIST'G INTERIOR WINDOW, DOOR & FRAMING SYSTEM. FINISH EDGES OF REMAINING OPENING TO MATCH ADJ. CONST.**

04 **REMOVE PORTION OF EXIST'G KNEE-WALL BELOW WINDOW TO BE REMOVED.**

05 **EXIST'G WALL COVERINGS TO REMAIN - FILL ALL JOINTS WITH PAINTABLE SEALANT. PATCH & PREP SURFACES TO BE PAINTED TO LEVEL 5 FINISH. (TYP. ENTIRE ROOM)**

06 **REMOVE EXIST'G APC & ALL SUPPORTING ELEMENTS IN THEIR ENTIRETY. RE-SUPPORT EXIST'G LIGHTS, SPEAKERS, F.A. & ALL OTHER CEILING-MOUNTED DEVICES UNTIL NEW CEILING SYSTEM IS INSTALLED. ALL EXISTING DEVICES MUST REMAIN FUNCTIONAL AT ALL TIMES. SEE MPE DWGS. FOR ADD'L INFO.**

07 **REMOVE EXIST'G CLOSET DOOR & SOFFIT ABOVE**

08 **REMOVE ALL EXIST'G FURNITURE/CASEWORK IN MAIN OFFICE**

09 **REMOVE EXIST'G DOOR & FRAME**

10 **REMOVE EXIST'G WALL**

* 11 **REMOVE EXIST'G FLOORING & MASTIC DOWN TO CONC. SLAB. *NOTE: ASBESTOS ABATEMENT REQUIRED - FOLLOW APPENDIX. PREP EXIST'G CONC. SLAB TO RECEIVE NEW FLOORING. INSTALL GYPSUM CEMENT UNDERLAYMENT THROUGHOUT TO LEVEL SLAB & BRING FLOORING TO MATCH ADJ. F.F. LEVELS.**

DOOR SCHEDULE - SCHOOL 5

DOOR							FRAME							REMARKS
NUMBER	TYPE	WIDE	HEIGHT	THICKNESS	MATERIAL	GLAZ'G TYPE	TYPE	WIDE	HEIGHT	MATERIAL	GLAZ'G TYPE	RATG (MIN)	THRESHOLD	HDW SET	
5.1	D-1	(2) 3'-0"	7'-0"	1 3/4"	AL	IGU-2	F-1	11'-9"	8'-6"	AL	IGU-1	N/A	X	1.0	(1)
5.2	D-1	(2) 3'-0"	7'-0"	1 3/4"	AL	IGU-2	F-2	9'-4"	9'-0"	AL	G-1	N/A	X	4.0	(1)
5.3	D-2	3'-0"	7'-0"	1 3/4"	WD	G-2	F-3	9'-8"	7'-2"	PHM	G-2	20	N/A	8.0	(1)
5.4	D-2	3'-0"	7'-0"	1 3/4"	WD	G-1	F-4	3'-4"	7'-2"	PHM	N/A	N/A	N/A	5.0	
5.5	D-2	3'-0"	7'-0"	1 3/4"	WD	G-1	F-4	3'-4"	7'-2"	PHM	N/A	N/A	N/A	5.0	

KEY:

AL	Aluminum
WD	Wood
PHM	Painted Hollow Metal
G-1	Interior Storefront Vision Glazing
G-2	Fire Rated Safety Glass (No wire glass permitted)
IGU-1	Exterior Storefront Vision Glazing
IGU-2	Aluminum Door Vision Glazing
N/A	Not Applicable

NOTES:

(1) Verify opening dimensions in field.

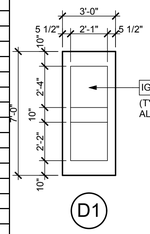
ROOM FINISH SCHEDULE - LINDENWOLD SCHOOL #5

RM #	ROOM NAME	FLR	BASE	WALLS				CLG	CLG. HT.	REMARKS
				NORTH	EAST	SOUTH	WEST			
100	RECEPTION	RTT	RUB	PTD	PTD	PTD	PTD	APC-1	MATCH	
101	MAIN OFFICE	LVCT	RUB	PTD	PTD	PTD	PTD	APC-1	MATCH	
102	CONFERENCE	LVCT	RUB	PTD	PTD	PTD	PTD	APC-1	MATCH	

FINISH SCHEDULE KEY

APC-#	Acoustical Panel Ceiling. Refer to Section 09511 - Acoustical Panel Ceilings for panel types.
PTD	Paint
RTT	Resilient Terrazzo Tile
LVCT	Vinyl Composite Tile
MATCH	Match Existing Ceiling Heights

NOTE: FOLLOW MPE DWGS. FOR ADDITIONAL REQUIREMENTS



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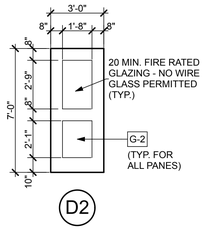

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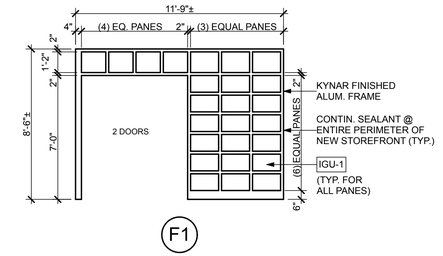

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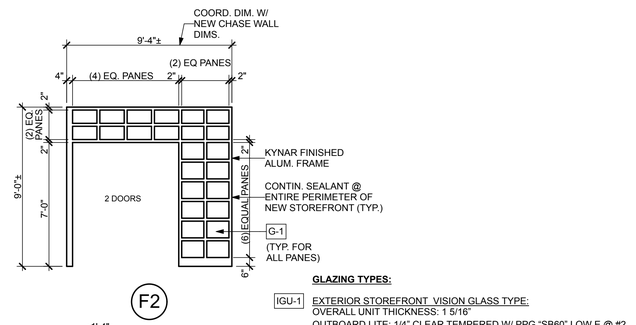

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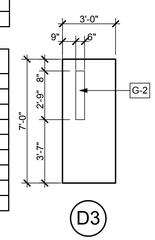

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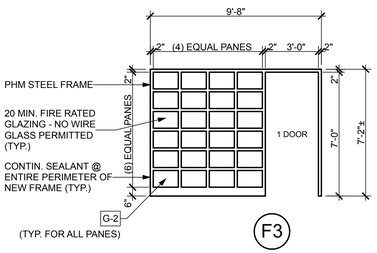

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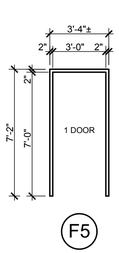

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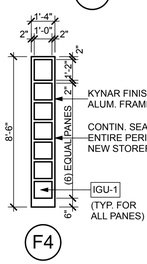

F4

DOOR/FRAME TYPES

SCALE: 1/4" = 1'-0" | 03 | A100

GLAZING TYPES:

IGU-1 EXTERIOR STOREFRONT VISION GLASS TYPE:
OVERALL UNIT THICKNESS: 1 5/16"
OUTBOARD LITE: 1/4" CLEAR TEMPERED W/ PPG "SB60" LOW E @ #2
AIR SPACE: 1/2" WARM EDGE SPACER
INBOARD LITE: 9/16" CLEAR LAMINATED GLASS WITH DUPONT SENTRYGLAS INTERLAYER
1/4" CLEAR ANNEALED
0.090" DUPONT SENTRYGLAS INTERLAYER
1/4" CLEAR ANNEALED

IGU-2 ALUMINUM DOORS:
OVERALL UNIT THICKNESS: 1-1/16"
OUTBOARD LITE: 3/16" CLEAR TEMPERED W/ PPG "SB60" LOW E @ #2
AIR SPACE: 1/2" WARM EDGE SPACER
INBOARD LITE: 5/16" CLEAR LAMINATED GLASS WITH DUPONT SENTRYGLAS INTERLAYER
1/8" CLEAR ANNEALED
0.090" DUPONT SENTRYGLAS INTERLAYER
1/8" CLEAR ANNEALED

G-1 INTERIOR STOREFRONT VISION GLAZING:
OVERALL UNIT THICKNESS: 9/16"
GLASS SURFACE 1: 1/4" ANNEALED
INTERLAYER: 0.090" DUPONT SENTRYGLAS INTERLAYER
GLASS SURFACE 2: 1/4" CLEAR ANNEALED

G-2 INTERIOR FIRE-RATED VISION GLAZING:
OVERALL UNIT THICKNESS: 5/16"
GLASS SURFACE 1: 3/16" ANNEALED CERAMIC GLASS
INTERLAYER: 0.030" DUPONT SENTRYGLAS INTERLAYER
GLASS SURFACE 1: 3/16" ANNEALED CERAMIC GLASS

PRINT DATE: 3/12/21

REGAN YOUNG, AIA
21AI00912100

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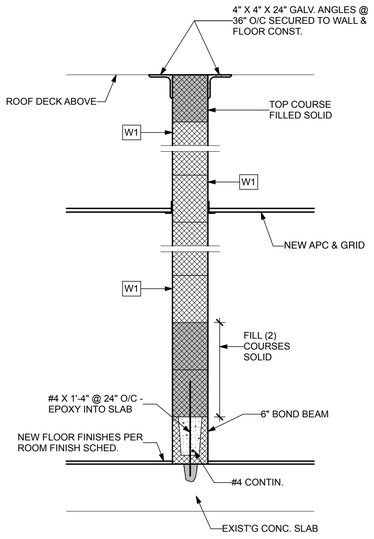
NJDOE SP #2670-050-19-1000

BUILDING ENTRANCES
SECURITY ENHANCEMENT
LINDENWOLD SCHOOL 5
550 CHEWS LANDING ROAD
LINDENWOLD, NJ 08021

TITLE: DEMO & NEW WORK PLANS / DETAILS

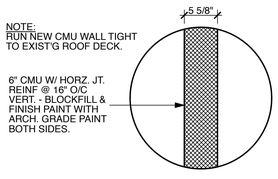
DRAWING DATE: 26 FEB 2021
REVISION DATE:
DRAWN BY: PF
COMMISSION NO.: 5643A

SCHOOL 5
A100
2 OF 5

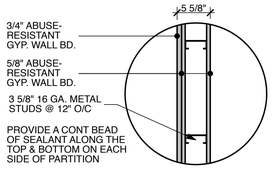


WALL SECTION

SCALE: 1" = 1'-0" | 04 | A101



WALL TYPE W1

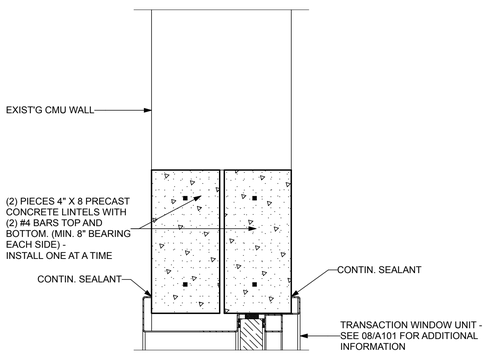


WALL TYPE W2

NOTE:
1. RUN NEW MTL. STUD PARTITION TIGHT TO UNDERSIDE OF ROOF DECK.

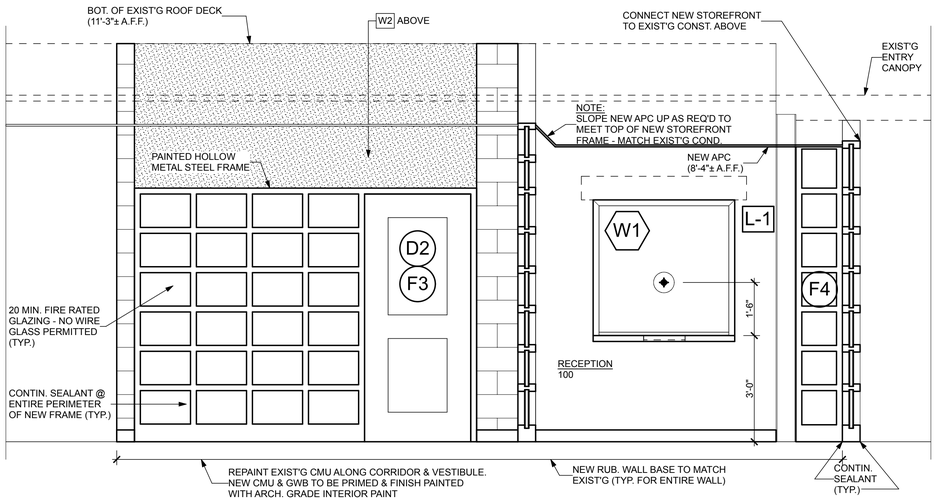
WALL TYPES

SCALE: 1" = 1'-0" | 05 | A101



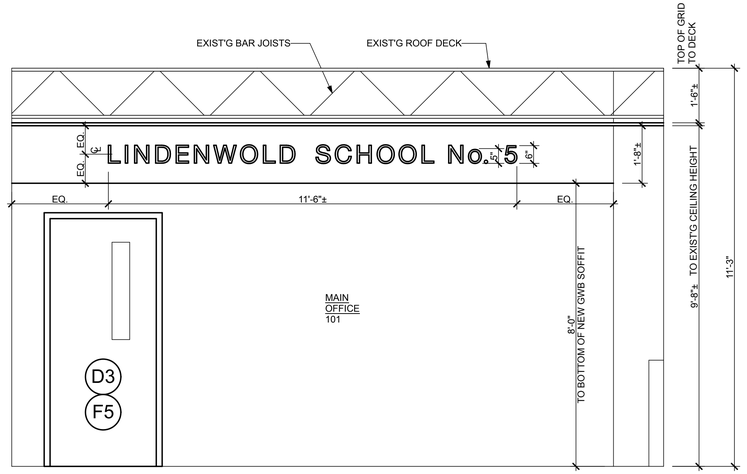
LINTEL L-1

SCALE: 3" = 1'-0" | 06 | A101



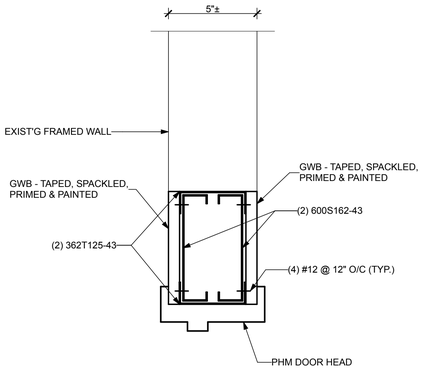
INTERIOR ELEVATION

SCALE: 1/2" = 1'-0" | 02 | A101



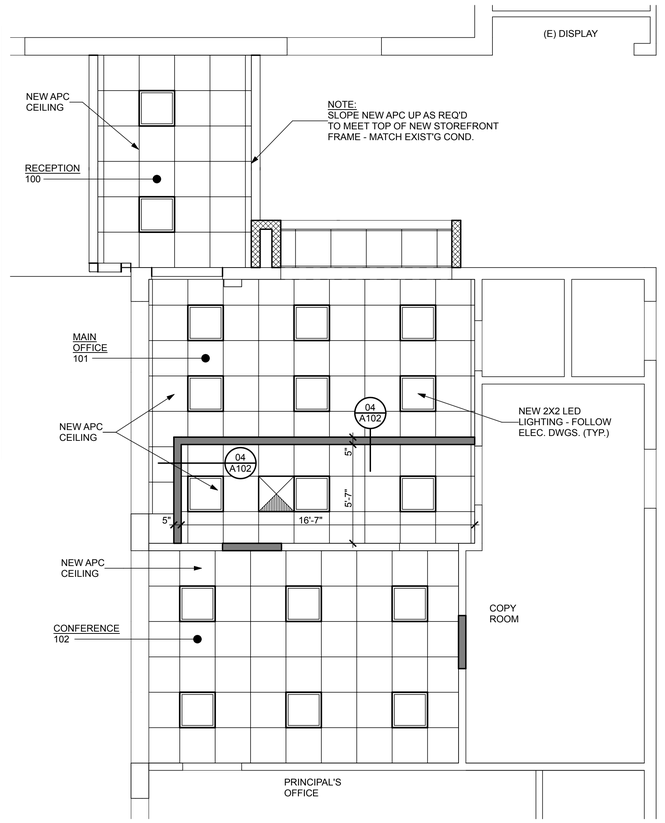
INTERIOR ELEVATION

SCALE: 1/2" = 1'-0" | 03 | A101



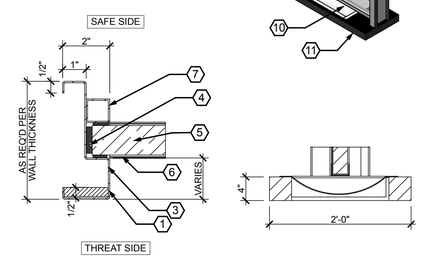
LINTEL L-2

SCALE: 3" = 1'-0" | 07 | A101



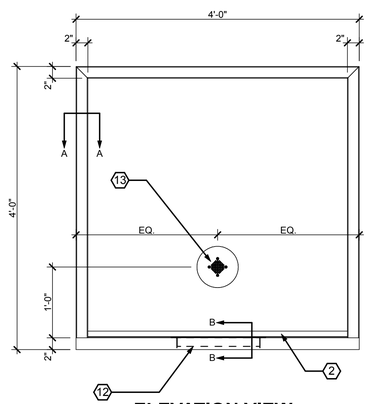
SCHOOL 5 REFL. CLG.

SCALE: 1/2" = 1'-0" | 01 | A101



SECTION A-A

SECTION B-B



ELEVATION VIEW

NOTES:

1. BULLET RESISTANT ARMOR
2. STAINLESS STEEL GLAZING CAPS
3. 16 GA. FIELD-PRIMED & PAINTED STEEL FRAME
4. NEOPRENE SETTING BLOCKS
5. BULLET RESISTANT GLAZING
6. GLAZING TAPE
7. REMOVABLE STOP 1" X 1"
8. ANCHOR HOLES AS REQUIRED PER MANUF. (NOT SHOWN)
9. ANCHORS AS REQUIRED PER MANUF. (NOT SHOWN)
10. STAINLESS STEEL DEAL TRAY
11. STAINLESS STEEL SHELF
12. STAINLESS STEEL CAP
13. SPEAKER

TRANSACTION WINDOW DETAILS

SCALE: NTS | 08 | A101

PRINT DATE: 3/12/21

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NJDOE SP #2670-050-19-1000

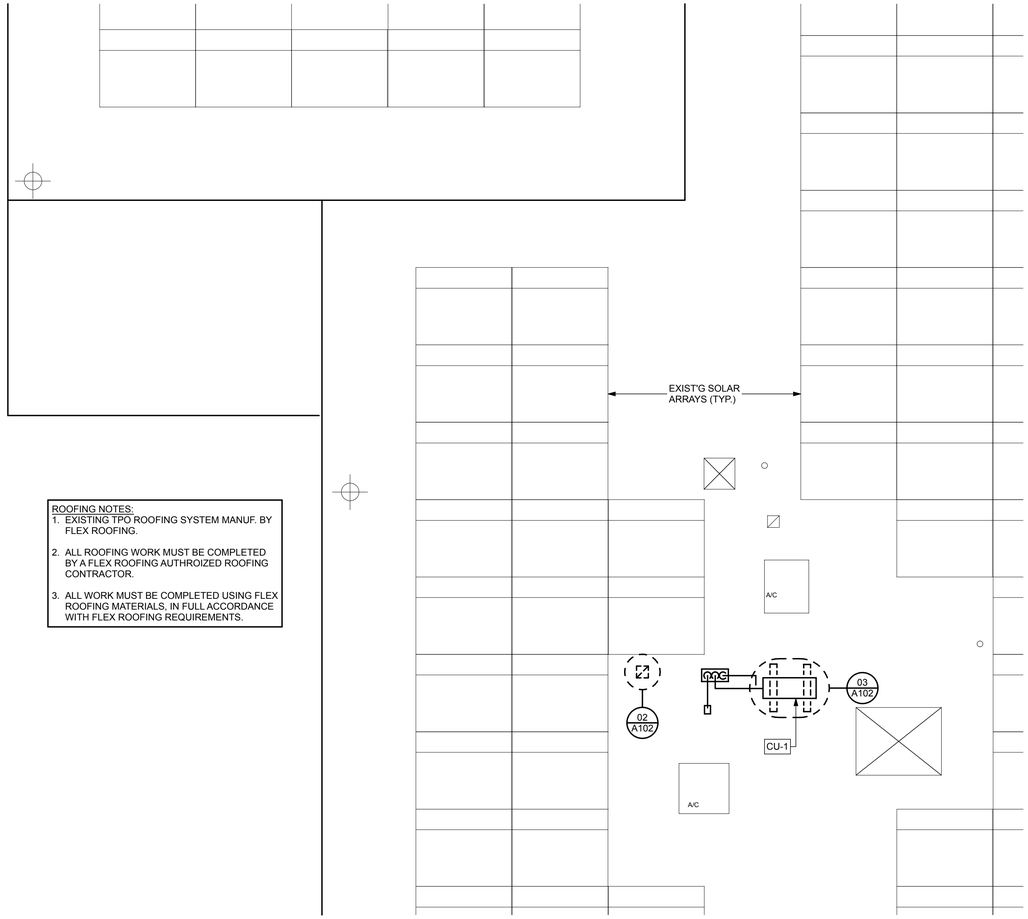
BUILDING ENTRANCES
SECURITY ENHANCEMENT
LINDENWOLD SCHOOL 5
550 CHEWS LANDING ROAD
LINDENWOLD, NJ 08021

TITLE: REFLECTED CEILING PLAN / DETAILS

DRAWING DATE: 26 FEB 2021
REVISION DATE:
DRAWN BY: PF
COMMISSION NO.: 5643A

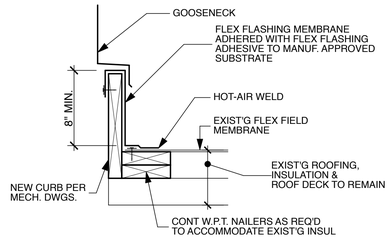
SCHOOL 5
A101
3 OF 5

ROOFING NOTES:
1. EXISTING TPO ROOFING SYSTEM MANUF. BY FLEX ROOFING.
2. ALL ROOFING WORK MUST BE COMPLETED BY A FLEX ROOFING AUTHROIZED ROOFING CONTRACTOR.
3. ALL WORK MUST BE COMPLETED USING FLEX ROOFING MATERIALS, IN FULL ACCORDANCE WITH FLEX ROOFING REQUIREMENTS.

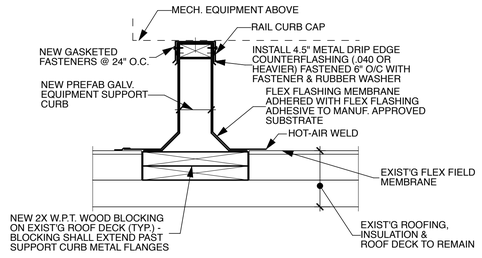


PARTIAL ROOF PLAN
SCALE: 1/4" = 1'-0" | 01 | A102

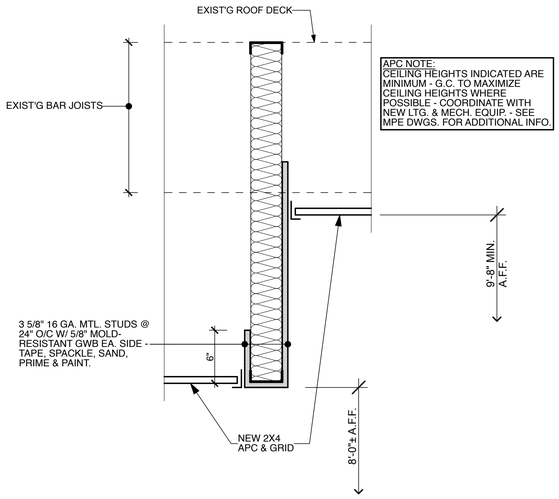
NOTE:
FOLLOW FLEX MEMBRANE INTERNATIONAL REQM'TS FOR PVC MEMBRANE FOR ALL ROOFING WORK.



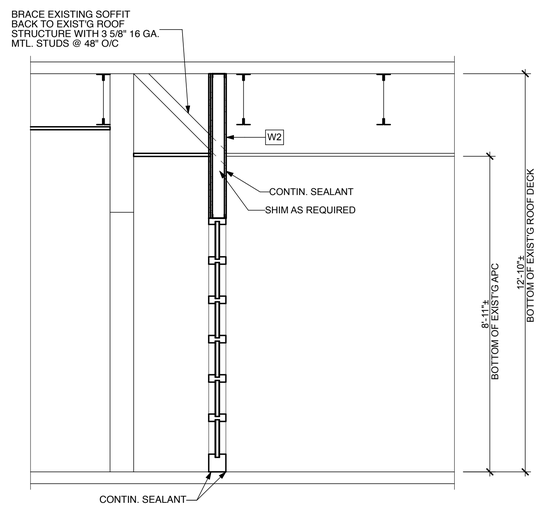
TYP. CURB FLASHING DTL.
NTS | 02 | A103



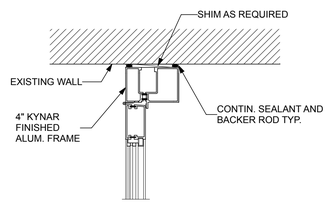
TYP. EQUIPMENT CURB DTL.
NTS | 03 | A103



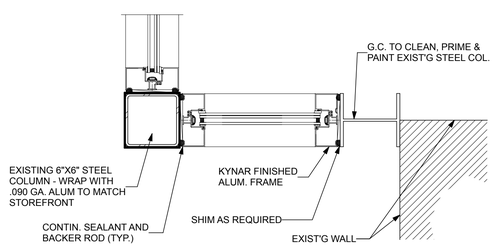
SOFFIT DETAIL
SCALE: 1 1/2" = 1'-0" | 04 | A102



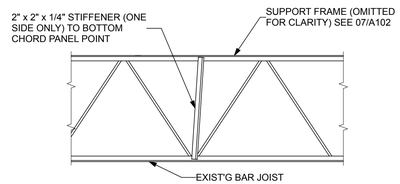
BRACING DETAIL
SCALE: 1/2" = 1'-0" | 10 | A102



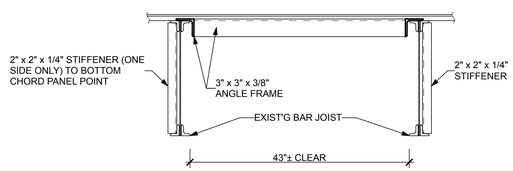
PLAN DETAIL
SCALE: 1 1/2" = 1'-0" | 08 | A102



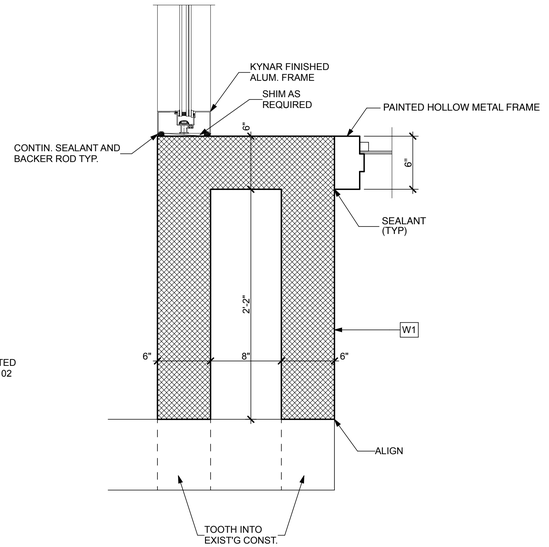
PLAN DETAIL
SCALE: 1 1/2" = 1'-0" | 09 | A102



JOIST STIFFENER DTL.
SCALE: 3/4" = 1'-0" | 06 | A102



ANGLE FRAME DTL.
SCALE: 3/4" = 1'-0" | 07 | A102



PLAN DETAIL
SCALE: 1 1/2" = 1'-0" | 05 | A102

PRINT DATE: 3/12/21

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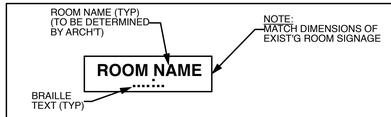
NJDOE SP #2670-050-19-1000

BUILDING ENTRANCES
SECURITY ENHANCEMENT
LINDENWOLD SCHOOL 5
550 CHEWS LANDING ROAD
LINDENWOLD, NJ 08021

TITLE: ROOF PLAN, ROOF DTLS. & MISC. DTLS.

DRAWING DATE: 26 FEB 2021
REVISION DATE:
DRAWN BY: PF
COMMISSION NO.: 5643A

SCHOOL 5
A102
4 OF 5



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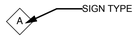


SIGN TYPE SYMBOL

SIGNAGE MOUTED ON GLASS:

SIGNAGE REQUIRED TO BE MOUNTED TO GLASS SHALL HAVE A BLANK BACK PANEL MADE OF THE SAME MATERIAL AND OF THE SAME SIZE AND COLOR AS THE SIGN ADHERED TO THE OPPOSITE SIDE OF THE GLASS.

MOUNTING LOCATION AND HEIGHT:

WHERE PERMANENT IDENTIFICATION WITH TACTILE CHARACTERS IS PROVIDED FOR ROOMS AND SPACES, SIGNS SHALL BE INSTALLED ON THE WALL ADJACENT TO THE LATCH SIDE OF THE DOOR. AT DOUBLE LEAF DOORS, THE SIGN SHALL BE TO THE RIGHT OF THE RIGHT-HAND DOOR. WHERE THERE IS NO WALL SPACE ON THE LATCH SIDE OF A SINGLE DOOR, OR THE RIGHT SIDE OF DOUBLE DOORS, SIGNS SHALL BE ON THE NEAREST ADJACENT WALL. SIGNS SHALL HAVE AN 18-INCH MINIMUM SPACE ON THE FLOOR OR GROUND, CENTERED ON THE SIGN, BEYOND THE ARC OF ANY DOOR SWING BETWEEN THE CLOSED POSITION AND 45-DEGREE OPEN POSITION. WHERE SIGNS ARE INDICATED TO BE MOUNTED ON A WINDOW OR SIDELITE, A BLANK BACKER PANEL OF THE SAME SIZE AND COLOR AS THE SIGN SHALL BE PROVIDE ON THE OPPOSITE SIDE OF THE GLASS. MOUNTING HEIGHTS SHALL BE AS FOLLOWS:

60-INCHES MAXIMUM TO 48-INCHES MINIMUM ABOVE FINISH FLOOR TO THE BASELINE OF THE CHARACTERS. (Standard)

MAXIMUM OF 48-INCHES ABOVE FINISH FLOOR TO CENTERLINE OF SIGN. (NJ Children)

RAISED AND BRAILLED CHARACTERS AND PICTORIAL SYMBOL SIGNS:

LETTERS AND NUMERALS SHALL BE RAISED 1/32-INCH, UPPER CASE, SANS SERIF OR SIMPLE SERIF TYPE AND SHALL BE ACCOMPANIED WITH GRADE 2 BRAILLE. RAISED CHARACTERS SHALL BE AT LEAST 5/8-INCH HIGH, BUT NO HIGHER THAN 2-INCHES. PICTOGRAMS SHALL BE ACCOMPANIED BY THE EQUIVALENT VERBAL DESCRIPTION PLACED DIRECTLY BELOW THE PICTOGRAM. THE BORDER DIMENSION OF THE PICTOGRAM SHALL BE 6-INCHES MINIMUM IN HEIGHT. REFER TO TABLE 703.2.4 & 703.4.3 IN ANSI A117.1-2009 FOR REQUIRED CHARACTER AND BRAILLE DIMENSIONS.

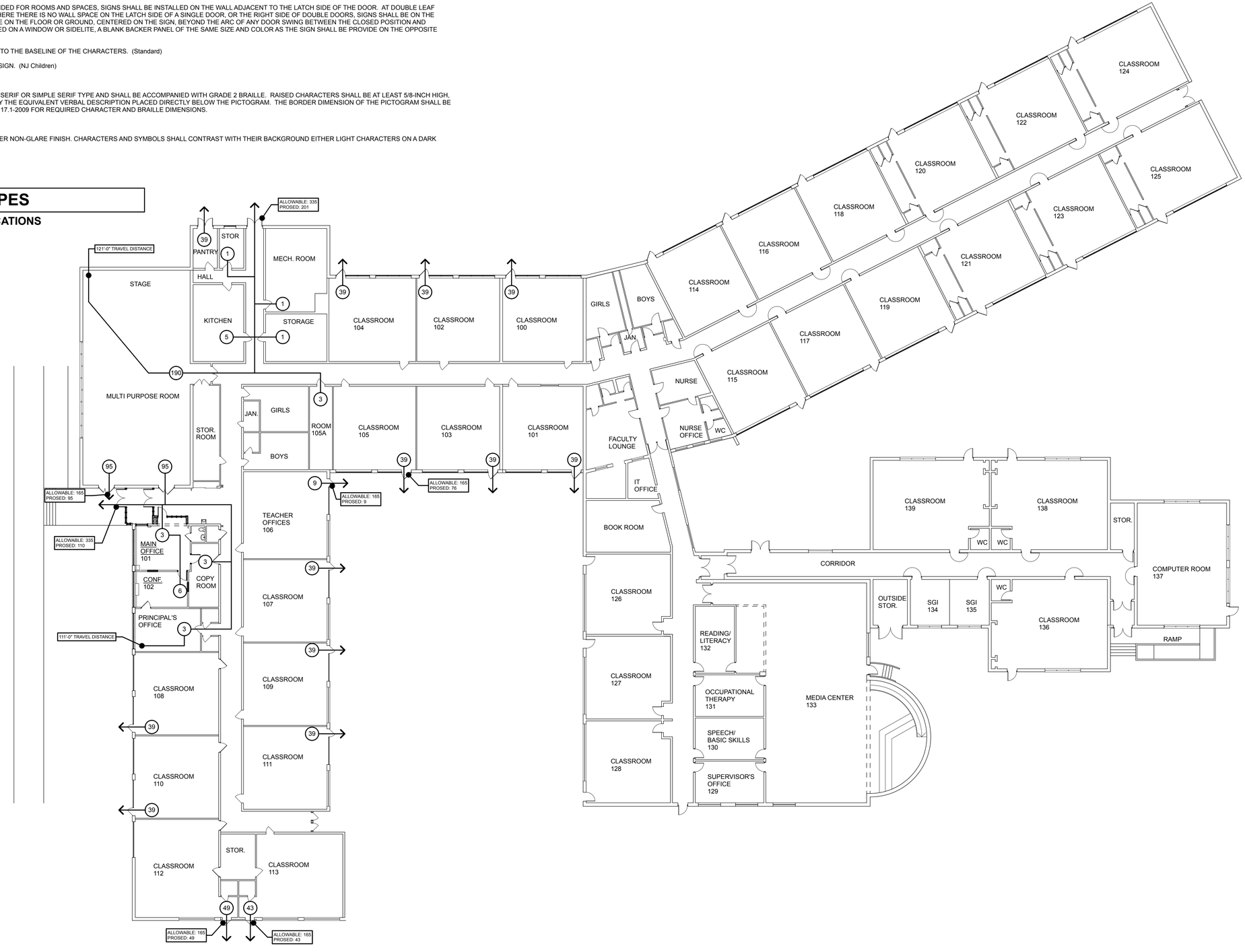
FINISH AND CONTRAST:

THE CHARACTERS AND BACKGROUND OF SIGNS SHALL BE MATTE, OR OTHER NON-GLARE FINISH. CHARACTERS AND SYMBOLS SHALL CONTRAST WITH THEIR BACKGROUND EITHER LIGHT CHARACTERS ON A DARK BACKGROUND OR DARK CHARACTERS ON A LIGHT BACKGROUND.

REFER TO ICC/ANSI A117.1-2009 FOR ADDITIONAL REQUIREMENTS

BARRIER FREE/SIGNAGE TYPES

NOTE: SEE SHEET A100 FOR SIGNAGE LOCATIONS



PRINT DATE: 3/12/21

REGAN YOUNG, AIA
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NJDOE SP #2670-050-19-1000

BUILDING ENTRANCES
SECURITY ENHANCEMENT
LINDENWOLD SCHOOL 5
550 CHEWS LANDING ROAD
LINDENWOLD, NJ 08021

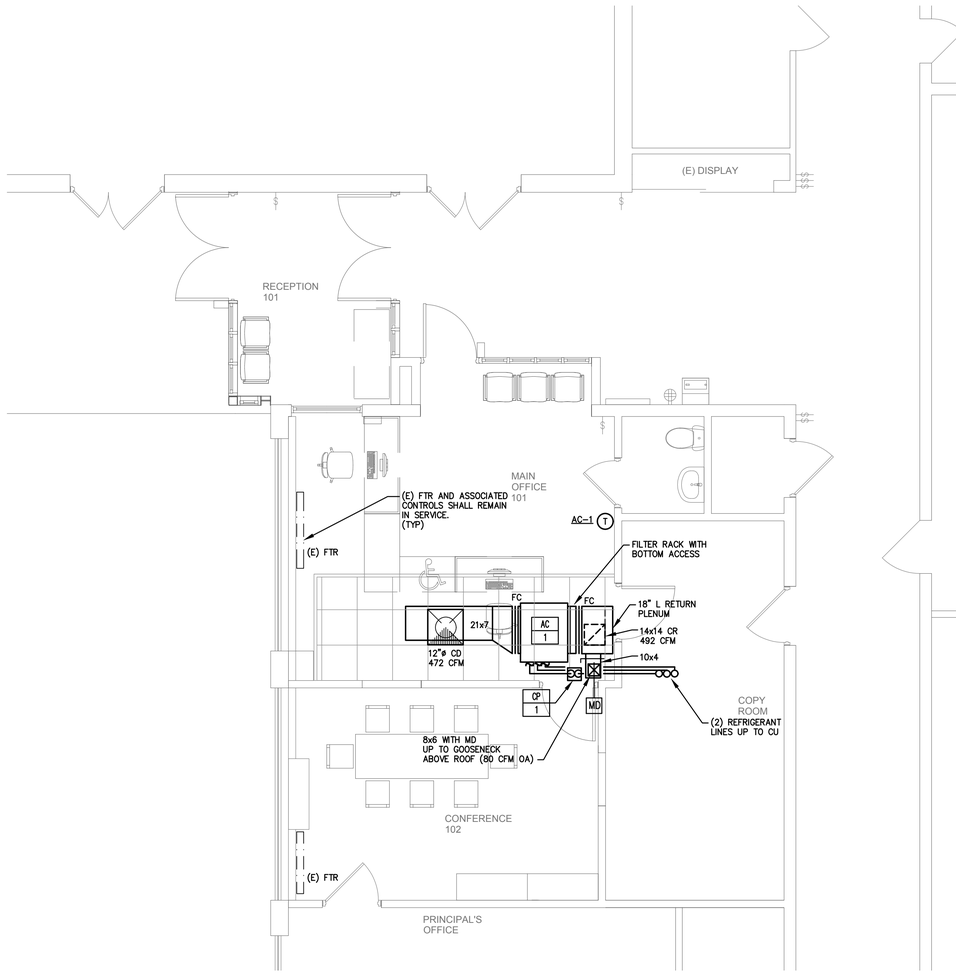
TITLE: EGRESS PLAN & SIGNAGE DETAILS

DRAWING DATE: 26 FEB 2021
REVISION DATE:
DRAWN BY: PF
COMMISSION NO.: 5643A

SCHOOL 5

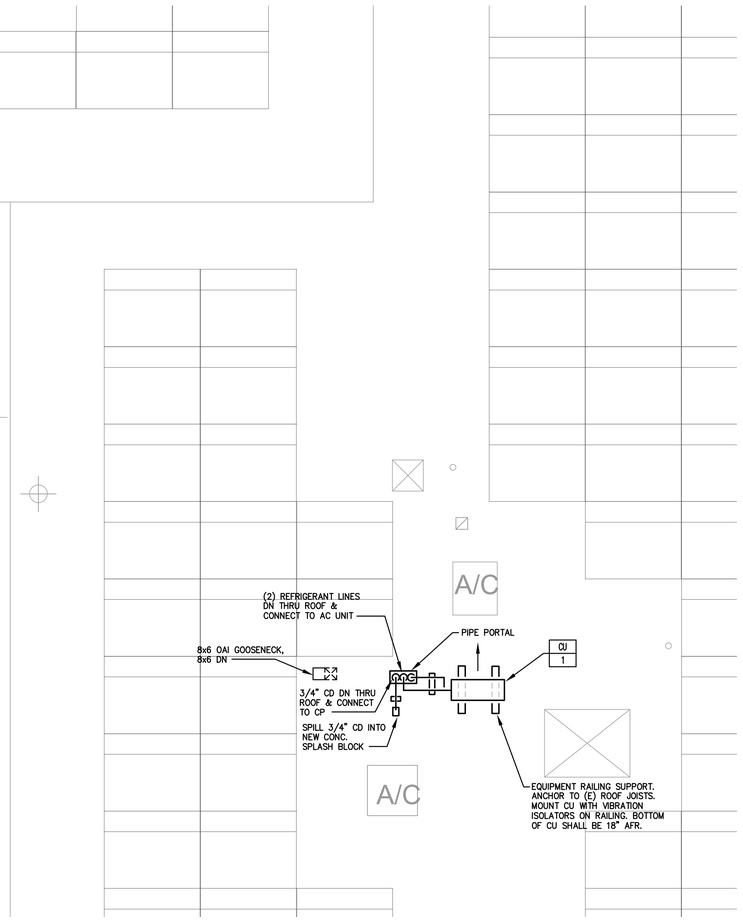
A103

5 OF 5



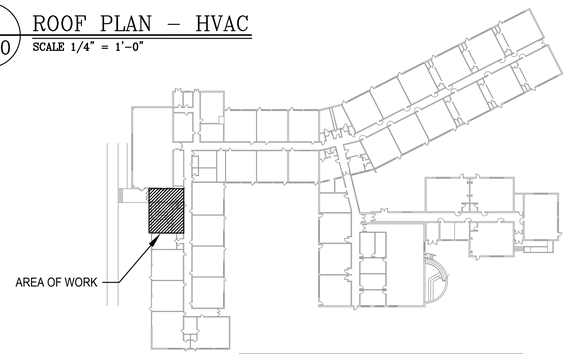
1 H100 PARTIAL FLOOR PLAN – HVAC

SCALE 1/4" = 1'-0"



2 H100 ROOF PLAN – HVAC

SCALE 1/4" = 1'-0"



KEY PLAN NTS

PRINT DATE: 1/8/21

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21AI00912100

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NJDOE SP # 2670-050-19-1000

BUILDING ENTRANCES
SECURITY ENHANCEMENTS

LINDENWOLD SCHOOL 5
550 CHEWS LANDING ROAD
LINDENWOLD, NJ 08021

TITLE: PARTIAL FLOOR PLANS - HVAC

DRAWING DATE: 26 FEB 2021
REVISION DATE:
DRAWN BY: EL
COMMISSION NO.: 5643A

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Frank Tindall, P.E.
Professional Engineer
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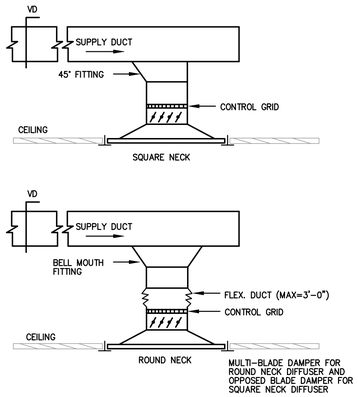
SCHOOL 5

H100

1 OF 3



1 H200 CEILING DIFFUSER TAKE-OFF DETAIL

NOT TO SCALE

SIMILAR FOR RETURN & EXHAUST AIR OUTLET

ABBREVIATIONS

AC	AIR CONDITIONING UNIT
AFF	ABOVE FINISHED FLOOR
AHC	ABOVE HUNG CEILING
ARCH	ARCHITECTURAL
APD	AIR PRESSURE DROP
&	AND
BHP	BRAKE HORSEPOWER
CFM	CUBIC FEET PER MINUTE
CU	CONDENSING UNIT
CD	CONDENSATE DRAIN
DB	DRY BULB
DIA/ø	DIAMETER
DN	DOWN
DWG	DRAWING
EA	EACH, EXHAUST AIR
EAT	ENTERING AIR TEMPERATURE
EDB	ENTERING DRY BULB
ESP	EXTERNAL STATIC PRESSURE
EXIST./(E)	EXISTING
°F	FAHRENHEIT
FC	FLEXIBLE CONNECTOR
FLA	FULL LOAD AMPS
FPM	FEET PER MINUTE
H	HEIGHT, HIGH
HR	HOUR
Hz	HERTZ (FREQUENCY)
IN	INCH
IWG	INCHES IN WATER GAUGE
IWC	INCHES OF WATER COLUMN
KHz	KILOHERTZ
KW	KILOWATTS
LAT	LEAVING AIR TEMPERATURE
LBS/HR	POUNDS PER HOUR
L	LENGTH
LBS	POUNDS
LDB	LEAVING DRY BULB
LWB	LEAVING WET BULB
LxWxH	LENGTH BY WIDTH BY HEIGHT
LWT	LEAVING WATER TEMPERATURE
MAX	MAXIMUM
MBH	THOUSAND BTU PER HOUR
MCA	MINIMUM CIRCUIT AMPACITY
MIN	MINIMUM
MOCP	MAX OVER CURRENT PROTECTION
#, No.	NUMBER
OA	OUTSIDE AIR
OAI	OUTSIDE AIR INTAKE
PD	PRESSURE DROP
%	PERCENT
PH	PHASE
RA	RETURN AIR
RPM	REVOLUTIONS PER MINUTE
RR	RETURN REGISTER
SA	SUPPLY AIR
SENS	SENSIBLE
SF	SUPPLY FAN
SQ FT	SQUARE FOOT
SPEC	SPECIFICATIONS
SP	STATIC PRESSURE
SS	STAINLESS STEEL
T	THERMOSTAT
TA	THROW AWAY
TEMP	TEMPERATURE
TYP	TYPICAL
V/PH/Hz	VOLTS/PHASE/HERTZ
VD	VOLUME DAMPER
WB	WET BULB
(W)	WATT
W	WIDTH
W/	WITH
WMS	WIRE MESH SCREEN
WPD	WATER PRESSURE DROP
WT	WEIGHT

HVAC SYMBOLS LIST

- X / X — EQUIPMENT DESIGNATION / ITEM NUMBER
- T — THERMOSTAT
- MD — MOTORIZED DAMPER
- SUPPLY AIR FLOW
- RETURN OR EXHAUST AIRFLOW
- 8x6 — DUCT SIZE, SECOND FIGURE IS HEIGHT SHOWN
- PIPE TURNED UP
- PIPE TURNED DOWN
- (E) HWS — (E) HEATING HOT WATER SUPPLY
- (E) HWR — (E) HEATING HOT WATER RETURN
- EXISTING WORK TO REMAIN
- EXISTING WORK TO BE REMOVED
- NEW WORK (DOUBLE-LINE & EQPT.)
- NEW WORK (SINGLE-LINE)
- VOLUME DAMPER (MANUAL)
- POINT OF REMOVAL

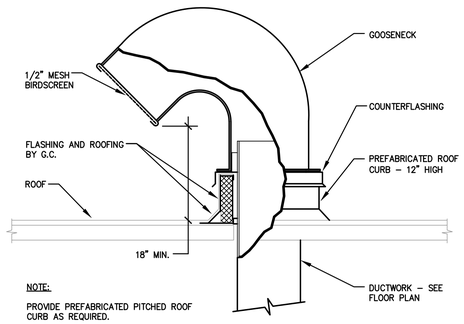
CONDENSING UNIT SCHEDULE

CU #

LOCATION		SCHOOL 5 – ROOF
TAG No.		CU-1
MANUFACTURER		DAIKIN
MODEL No.		RX18RMVJU9A
TYPE		HEAT PUMP
RATED COOLING CAPACITY	MBH	17.6
RATED HEATING CAPACITY	MBH	21.6
AHRI EER		12.5
REFRIGERANT DATA:		
REFRIGERANT TYPE		R410A
REFRIGERANT CHARGE	LBS	2.49
LIQUID LINE	IN	1/4
GAS LINE	IN	1/2
ELECTRICAL DATA:		
POWER	V/PH/HZ	208/1/60
MINIMUM CIRCUIT AMPS	AMPS	12.8
MAXIMUM FUSE SIZE	AMPS	15
NET WEIGHT (APPROX.)	LBS	110
DIMENSIONS (WxHxD)	IN	35x29x13

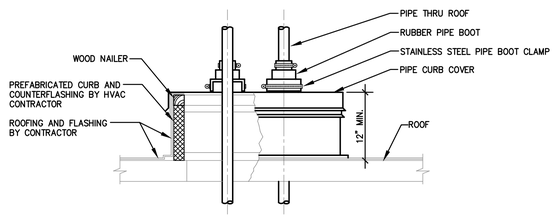
NOTES:

1. COMPLY WITH MANUFACTURER'S RECOMMENDED INSTALLATION INSTRUCTIONS.
2. INSTALL, SIZE, AND INSULATE REFRIGERANT PIPING ACCORDING TO MANUFACTURER'S INSTALLATION INSTRUCTIONS.
3. PROVIDE WEATHERPROOF FUSED DISCONNECT FOR OUTDOOR UNIT.
4. PROVIDE LOW AMBIENT HEATING AND WEATHER BAFFLE AS REQUIRED
5. PROVIDE SEISMIC RATED EQUIPMENT RAILING WITH VIBRATION ISOLATORS. BOTTOM OF CU SHALL BE 18" ABOVE FINISHED ROOF.
6. UNIT SHALL BE CCAPABLE OF COOLING DOWN TO -4 AND HEATING DOWN TO -13 DEGE
7. PROVIDE FACTORY START UP & PERSONNEL TRAINING.



2 H200 GOOSENECK DETAIL

NOT TO SCALE

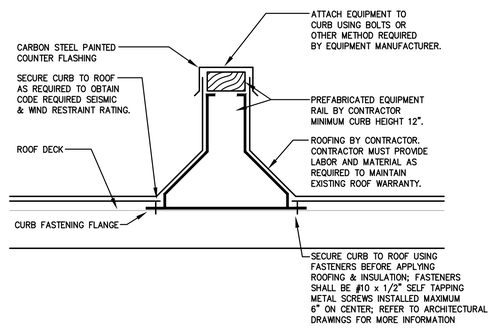


3 H200 TYPICAL PIPE PENETRATION THROUGH ROOF

NOT TO SCALE

NOTES:

1. REFER TO ROOFING DETAILS ON ARCHITECTURAL DRAWINGS.
2. ALL WOOD SHALL BE PRESSURE TREATED FIRE RETARDANT.



4 H200 EQUIPMENT RAIL DETAIL

NOT TO SCALE

VRV INDOOR AC UNIT SCHEDULE

AC #

INDOOR UNIT

LOCATION	TAG No.	MANUFACTURER	MODEL NO	COOLING TOTAL CAPACITY (MBH)	COOLING SENSIBLE CAPACITY (MBH)	HEATING TOTAL CAPACITY (MBH)	ELECTRICAL DATA V/PH/HZ	ELECTRICAL DATA MCA (A)	SUPPLY AIR CFM (MEDIUM)	APROX WEIGHT (LBS)	DIMESIONS W x H x D (IN)
SCHOOL 5	AC-1	DAIKIN	FDMQ18RVJU	17.6	14.93	21.6	208/1/60	1.22	572	100	40 x 10 x 32

NOTES:

1. INSULATE ALL REFRIGERATION LINES BETWEEN AC AND CU.
2. INSTALL AND WIRE UNITS AS PER MANUFACTURER'S WRITTEN INSTRUCTIONS. MAXIMUM LENGTH OF REFRIGERANT PIPING AND NUMBER OF ELBOWS MUST BE STRICTLY FOLLOWED.
3. REFRIGERANT PIPE SIZES AND LENGTHS SHALL BE PER MANUFACTURER'S RECOMMENDATIONS BASED ON FIELD CONDITIONS.
4. PROVIDE FACTORY START UP AND PERSONNEL TRAINING.
5. PROVIDE AC UNIT WITH DRAIN PAN LEVEL SENSOR THAT WILL SHUT OFF THE EQUIPMENT SERVED IN THE EVENT THAT THE PRIMARY DRAIN IS BLOCKED AS PER 2018 IMC 307.2.3.
6. PROVIDE FILTER KIT MODEL DFK BY BUCKLEY WITH BOTTOM ACCESS WITH 2" MERV 13 FILTER.
7. PROVIDE FUSED DISCONNECT.
8. PROVIDE WIRED PROGRAMMABLE THERMOSTAT.
9. PROVIDE STEEL HANGER SUPPORTS WITH VIBRATION ISOLATORS.

DIFFUSER & REGISTER SCHEDULE

SELECTION BASED ON TITUS

NO.	MARK	REMARKS
1.	CD SHALL BE TITUS MODEL TMSA-AA OR APPROVED "EQUAL".	1 2 3 4
2.	CG/TG, CR/ER/RR SHALL BE TITUS MODEL 350-FL OR APPROVED "EQUAL".	4 5

REMARKS:

1. LOUVERED FACE, HIGH CAPACITY, ALUMINUM DIFFUSER WITH ROUND NECK AND ADJUSTABLE DISCHARGE PATTERN.
2. PROVIDE OPPOSED BLADE VOLUME DAMPER.
3. PROVIDE EQUALIZING GRID.
4. PROVIDE STANDARD WHITE FINISH.
5. ALUMINUM RETURN/EXHAUST REGISTER WITH BLADES AT 3/4" SPACING AND 35° FIXED DEFLECTION. REFER TO DRAWINGS FOR CORRECT MOUNTING STYLE.

CONDENSATE PUMP SCHEDULE

CP #

LOCATION		SCHOOL 5
TAG No.		CP-1
MANUFACTURER		LITTLE GIANT
MODEL		VCC-20-P
HEAD LIFT	FT	10
CAPACITY	GPH	45
ELECTRICAL DATA:		
POWER	V/PH/HZ	120/1/60
	HP	1/30
APPROX. WEIGHT	LBS	5

PROVIDE THE FOLLOWING:

1. BUILT-IN CHECK VALVE, FLOAT SWITCH, HARD WIRING, AND PLENUM RATING.

REGAN YOUNG, AIA
21AI00912100

REGAN YOUNG ENGLAND BUTERA
REFERENDUMS · ENGINEERING · ARCHITECTURE · DESIGN
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PRINT DATE: 1/8/21

NJDOE SP # 2670-050-19-1000

BUILDING ENTRANCES
SECURITY ENHANCEMENTS

LINDENWOLD SCHOOL 5
550 CHEWS LANDING ROAD
LINDENWOLD, NJ 08021

TITLE: SCHEDULES & DETAILS - HVAC

DRAWING DATE: 26 FEB 2021

REVISION DATE:

DRAWN BY: EL

COMMISSION NO.: 5643A

SCHOOL 5

H200

2 OF 3

KELTER & GILLIGO
consulting engineers
P.O. BOX 777 14 WASHINGTON RD.
PRINCETON JUNCTION NEW JERSEY 08550

Frank Tindall, P.E.
Professional Engineer
NJ 38656

HVAC SPECIFICATIONS:

1.0 GENERAL

A. GOVERNING CODES AND STANDARDS
   - a. NJ UNIFORM CONSTRUCTION CODE
   - b. 2018 INTERNATIONAL BUILDING CODE, NJ EDITION
   - c. 2018 INTERNATIONAL MECHANICAL CODE
   - d. NFPA STANDARDS 90A
   - e. ALL APPLICABLE ASHRAE STANDARDS
   - f. ALL APPLICABLE SMACNA STANDARDS
   - g. 2017 NATIONAL ELECTRICAL CODE
   - h. UL (ALL EQUIPMENT MUST BE LABELED)
   - i. NEBB.

B. ALL WORK SHALL BE INSTALLED IN ACCORDANCE WITH RECOGNIZED INDUSTRY STANDARDS, GOVERNING CODES, APPROVED SHOP DRAWINGS AND MANUFACTURER'S INSTRUCTIONS.

C. PERMITS: ACQUIRE ALL PERMITS AND PAY ALL FEES FOR THIS WORK.

D. WARRANTY: THE EQUIPMENT SHALL HAVE A MANUFACTURER'S WARRANTY FOR A PERIOD OF TWO (2) YEARS FROM DATE OF FINAL ACCEPTANCE BY OWNER. IF DURING THIS PERIOD, ANY PART SHOULD FAIL TO FUNCTION PROPERLY DUE TO DEFECTS IN WORKMANSHIP OR MATERIAL, IT SHALL BE REPLACED OR REPAIRED AT THE DISCRETION OF THE MANUFACTURER. MANUFACTURER SHALL HAVE FIFTEEN YEARS EXPERIENCE IN THE U.S. MARKET.

E. BEFORE SUBMITTING BIDS, CONTRACTOR SHALL VISIT THE SITE OF THE WORK AND BECOME THOROUGHLY FAMILIAR WITH THE OBSERVABLE EXISTING CONDITIONS AFFECTING HIS WORK. NO ADDITIONAL COMPENSATION WILL BE GRANTED ON ACCOUNT OF EXTRA WORK MADE NECESSARY BY THE CONTRACTOR'S FAILURE TO INVESTIGATE EXISTING CONDITIONS.

F. SUBMIT COMPOSITE COORDINATION SHOP DRAWINGS THAT SHOW ALL EXISTING AND NEW DUCTWORK, HVAC PIPING, PLUMBING PIPING, CONDUITS, LIGHTING FIXTURES, BUILDING STRUCTURE, CEILING MOUNTED EQUIPMENT, ETC. EXACT ELEVATION OF ALL COMPONENTS SHALL BE INDICATED

G. CONTRACTOR SHALL SUBMIT MARKED UP HVAC DRAWINGS TO ENGINEER TO SHOW "AS-BUILT" CONDITIONS AFTER SATISFACTORY COMPLETION OF PROJECT.

H. CONTRACTOR SHALL PROVIDE OWNER WITH FIVE (5) COPIES OF OPERATION AND MAINTENANCE MANUALS PRIOR TO ACCEPTANCE OF FINAL PAYMENT.

2.0 SUBMITTALS

A. SHOP DRAWINGS SHALL BE REQUIRED FOR: ALL EQUIPMENT, MATERIALS, MEANS & METHODS INTENDED FOR USE UNDER THIS CONTRACT.

B. PRIOR TO DELIVERY TO THE JOB SITE, BUT SUFFICIENTLY IN ADVANCE OF REQUIREMENTS NECESSARY TO ALLOW ENGINEER AMPLE TIME FOR REVIEW, SUBMIT SHOP DRAWINGS OF ALL EQUIPMENT, FIXTURES, MATERIAL, PIPING, DUCTWORK, SLEEVES, WIRING DIAGRAMS, ETC. AND FURTHER OBTAIN WRITTEN COMMENTS OF "APPROVED" OR "APPROVED AS NOTED" FOR THE SAME FROM ENGINEER BEFORE INSTALLING ANY OF THESE ITEMS.

C. SHOP DRAWINGS SHALL CONSIST OF MANUFACTURER'S CERTIFIED SCALE DRAWINGS, CUTS, OR CATALOGUES, INCLUDING DESCRIPTIVE LITERATURE AND COMPLETE CERTIFIED CHARACTERISTICS OF EQUIPMENT, FIXTURES, ETC. SHOWING DIMENSIONS, CAPACITY, CODE REQUIREMENTS, MOTOR AND DRIVE TESTING, AS INDICATED IN THE CONTRACT DOCUMENTS.

D. FAILURE TO SUBMIT SHOP DRAWINGS IN AMPLE TIME FOR CHECKING SHALL NOT ENTITLE AN EXTENSION OF CONTRACT TIME, AND NO CLAIM FOR EXTENSION BY REASON OF SUCH DEFAULT SHALL BE ALLOWED.

E. PRIOR TO SUBMISSION OF SHOP DRAWINGS CONTRACTOR SHALL THOROUGHLY CHECK EACH SHOP DRAWING, REJECT THOSE NOT CONFORMING TO THE SPECIFICATIONS, AND INDICATE BY SIGNED, STAMPED, & WRITTEN DECLARATION THAT THE SHOP DRAWINGS SUBMITTED MEET CONTRACT REQUIREMENTS.

F. THE COMMENT "APPROVED" OR "APPROVED AS NOTED" RENDERED ON SHOP DRAWINGS SHALL NOT BE CONSIDERED AS A GUARANTEE OF MEASUREMENTS OR BUILDING CONDITIONS. WHERE DRAWINGS ARE REVIEWED, SAID REVIEW DOES NOT IN ANY WAY RELIEVE THE RESPONSIBILITY, OR NECESSITY, OF FURNISHING MATERIAL OR PERFORMING WORK AS REQUIRED BY THE CONTRACT DRAWINGS AND SPECIFICATIONS

G. "APPROVED AS NOTED" MEANS, UNLESS OTHERWISE NOTED ON THE DRAWINGS, TO APPROVE FOR CONSTRUCTION, FABRICATION, AND/OR MANUFACTURE SUBJECT TO THE PROVISION THAT THE WORK SHALL BE CARRIED OUT IN COMPLIANCE WITH ALL ANNOTATIONS AND/OR CORRECTIONS INDICATED ON THE SHOP DRAWINGS AND IN ACCORDANCE WITH THE REQUIREMENTS OF THE CONTRACT DOCUMENTS.
   1. WHERE THE COMMENT "APPROVED AS NOTED" INCLUDES DIRECTION TO THE CONTRACTOR TO RESUBMIT CORRECTED SHOP DRAWINGS FOR RECORD; FAILURE TO COMPLY WITH THE INSTRUCTION TO RESUBMIT RECORD COPY SHALL RENDER ALL APPROVAL NULL AND VOID.

3.0 IDENTIFICATION

A. PROVIDE IDENTIFICATION FOR PIPING, DUCTWORK AND EQUIPMENT.

B. IDENTIFICATION SHALL BE IN ACCORDANCE WITH "SCHEME FOR IDENTIFICATION OF PIPING SYSTEM ANSI A13.1" AND OSHA SAFETY COLOR REGULATION.

C. MARKERS SHALL BE SNAP-ON TYPE AS MANUFACTURED BY SETON NAMEPLATE CORP., NEW HAVEN, CONN. (SETMARK SYSTEM), BUNTING STAMP CO. INC., PITTSBURGH, P.A. OR APPROVED EQUAL. MARKERS SHALL COMPLETELY ENCIRCLE THE PIPE WITH A SUBSTANTIAL OVERLAP. NO ADHESIVE SHALL BE USED. THEY SHALL BE MANUFACTURED OF U.L. APPROVED, SELF-EXTINGUISHING PLASTIC . WHEN THE PIPE INCLUDING INSULATION (IF ANY) IS 6" DIAMETER AND LARGER, MARKERS SHALL BE STRAP-ON TYPE.

D. PIPE SHALL BE LETTERED AND VALVES TAGGED. LETTERING SHALL BE LOCATED NEAR EACH VALVE AND BRANCH CONNECTION AND AT INTERVALS OF NOT OVER 40' ON STRAIGHT RUNS OF PIPE. PROVIDE FLOW ARROWS FOR ALL PIPING AT EACH MARKER. ADJACENT TO THE LEGEND, STENCIL THE SIZE OF THE PIPE, CONDUIT OR DUCTWORK. LETTER COLORS ARE AS FOLLOWS: YELLOW WITH BLACK LETTERS, GREEN WITH WHITE LETTERS, AND RED WITH WHITE LETTERS.

E. PROVIDE FOR EACH ITEM OF EQUIPMENT, INCLUDING AIR HANDLING AND CONDENSING UNITS, A PERMANENTLY ATTACHED NAMEPLATE MADE OF BLACK SURFACE, WHITE CORE LAMINATED BAKELITE WITH INCISED LETTERS. SUBCONTRACTOR FURNISHING EQUIPMENT SHALL PROVIDE NAMEPLATE. NAMEPLATES SHALL BE A MINIMUM OF 3" LONG BY 1 1/2" WIDE AND SHALL BEAR THE EQUIPMENT NAME AND ITEM NUMBER OF 1/2" HIGH WHITE LETTERS AS DESIGNATED IN THE EQUIPMENT SCHEDULE. MOUNTING SCREWS SHALL HAVE CHROME PLATED ACORN HEADED SCREWS.

4.0 BALANCING

A. NEBB CERTIFIED BALANCING COMPANY MUST BE A COMPANY WHICH IS INDEPENDENT OF THE CONTRACTOR AND BE APPROVED FOR USE BY THE OWNER PRIOR TO BALANCING THE SYSTEM.

B. BALANCE THE HEATING AND COOLING SYSTEMS TO PROVIDE UNIFORM TEMPERATURES IN ALL HEATED OR COOLED AREAS AND ROOMS.

C. BALANCE AIR SYSTEMS TO QUANTITIES INDICATED AND FURNISH A REPORT INDICATING DIFFUSER, REGISTER SIZES, LOCATIONS AND CFM VALUES INCLUDING CFM ACTUAL FAN PERFORMANCE DATA.

D. THE CONTRACTOR SHALL SUBMIT AN AIR BALANCE REPORT PRIOR TO FINAL ACCEPTANCE.

E. THE FOLLOWING DATA SHALL BE OBTAINED AND RECORDED AT THE SUPPLY FAN.
   1. FAN AND MOTOR RPM.
   2. MOTOR AND CURRENT VOLTAGE.
   3. FAN, COIL AND FILTER STATICS.
   4. NAMEPLATE DATA ON FAN AND MOTOR.
   5. MOTOR SHEAVE, FAN PULLY AND BELT SIZES.

F. MEASURE THE SYSTEM DUCT STATIC PRESSURE.

G. BALANCE THE OUTLETS TO DESIGN CFM AND RECORD ALL READINGS.

5.0 SHEET METAL WORK

A. FURNISH AND INSTALL ALL SHEET METAL DUCTWORK, PLENUMS, AND ITEMS OF METAL WORK AS NECESSARY TO COMPLETE THE VARIOUS AIR CONDITIONING, VENTILATING AND HEATING SYSTEMS OF THE BUILDING SO THEY ARE READY FOR SATISFACTORY OPERATION. WHILE THE INSTALLATION SHOULD ADHERE TO THE PLANS AND SPECIFICATIONS AS MUCH AS POSSIBLE, THE CONTRACTOR SHALL BE ENTITLED TO MODIFY THE RUNS AND SIZES OF THE DUCTWORK AND TO MAKE OFFSETS, WHERE NECESSARY TO ACCOMMODATE BUILDING CONDITIONS, ONLY AFTER RECEIPT OF WRITTEN APPROVAL FROM THE ENGINEER. ALL SUCH CHANGES OR OFFSETS SHALL BE INDICATED IN THE "AS-BUILT" DRAWINGS SUBMITTED AT THE END OF THE JOB.

B. DUCTWORK SHALL BE CONSTRUCTED ACCORDING TO THE "EQUIPMENT HANDBOOK" PUBLISHED BY ASHRAE AND "HVAC DUCT CONSTRUCTION STANDARDS" PUBLISHED BY SMACNA.

C. SHEET METAL GAUGES, TRANSVERSE JOINTS, LONGITUDINAL SEAMS AND INTERMEDIATE REINFORCING MUST BE IN CONFORMANCE WITH SMACNA STANDARDS FOR 6" W.G. AND SEAL CLASS A.

D. ALL DUCTWORK SHALL BE CONSTRUCTED OF GALVANIZED STEEL OF U.S. D. STANDARD SHEET METAL GAUGE UNLESS NOTED OTHERWISE ON THE DRAWINGS. ALL JOINTS SHALL BE SEALED AIRTIGHT WITH 3MEC-800. CONNECTIONS TO FAN SHALL BE THRU ACID RESISTANT RUBBER NOT LESS THAN 4" LONG, FUME TIGHT AND SECURELY FASTENED WITH COPPER METAL BANDS.

E. ALL CHANGES IN DIRECTION, HORIZONTAL OR VERTICAL, SHALL BE SHAPED TO PERMIT THE EASIEST POSSIBLE AIR FLOW, USING CENTERLINE RADIUS OF 1-1/2 X WIDTH. FOR ALL CASES WHERE 90 DEGREE SQUARE ELBOWS ARE USED, APPROVED DOUBLE THICKNESS TURNING VANES SHALL BE USED. HVAC CONTRACTOR SHALL SUBMIT DETAILS FOR APPROVAL.

F. ALL DUCTWORK SHALL BE BUILT WITH APPROVED JOINTS AND SEAMS SMOOTH ON THE INSIDE WITH LAPS MADE IN THE DIRECTION OF THE AIR FLOW AND NO FLANGES PROJECTING INTO THE AIR STREAM. OUTSIDE SEAMS AND JOINTS SHALL BE AS NEAR TO AIR TIGHT AS POSSIBLE WITH A NEAT FINISH. THE CONTRACTOR SHALL CAULK ALL JOINTS WHICH ARE NOT MECHANICALLY TIGHT.

G. LONGITUDINAL JOINTS SHALL BE PITTSBURGH LOCK AT CORNERS OR ACME LOCK ON FLAT SURFACES DOUBLE SEAMS HAMMERED TIGHT AND SHALL BE LOCATED ABOVE THE HORIZONTAL AXIS OF THE DUCT. A SNAP LOCK SEAM SHALL NOT BE PERMITTED AS A SUBSTITUTE FOR THE PITTSBURGH LOCK AT CORNERS OF DUCTS.

H. TRAVERSE JOINTS SHALL BE MADE AIRTIGHT WITH ALL LAPS IN THE DIRECTIONS OF AIR FLOW.

I. VOLUME DAMPERS AS SHOWN ON DRAWINGS AND AS REQUIRED FOR PROPER OPERATION SHALL BE INSTALLED IN THE VARIOUS BRANCHES FOR USE IN BALANCING THE SYSTEM. VOLUME DAMPERS SHALL BE OF MULTI-OPPOSED BLADE CONSTRUCTION WITH LOCKING QUADRANTS FOR ALL DUCTS OVER 12" IN DEPTH. MOUNTED OUTSIDE OF THE DUCT IN AN ACCESSIBLE PLACE. VOLUME DAMPERS SHALL BE RUSKIN MODEL MD35 OR APPROVED EQUAL WITH END BEARINGS, STAND OFF FOR INSULATED DUCTWORK AND CONTINUOUS AXLE & LOCKING QUADRANT.

J. ALL DUCTWORK SHALL BE HUNG FROM THE BUILDING STRUCTURE.

K. ALL DUCTWORK SHALL BE INTERNALLY LINED WITH ANTI-MICROBIAL MINIMUM 1" THICK, 2 LB DENSITY FIBROUS GLASS. INTERNAL LINING SHALL MEET THE REQUIREMENTS OF NFPA 90A, WITH FLAME SPREAD, SMOKE DEVELOPMENT, AND FUEL CONTRIBUTED NOT EXCEEDING 25, 50, AND 50 RESPECTIVELY AS TESTED BY PROCEDURE ASTM-84, NFPA 255, AND UL 723 UNLESS OTHERWISE NOTED. INTERNAL LINING SHALL PROVIDE MINIMUM R VALUE OF 6.0 WHEN INSTALLED.

6.0 SUPPORTS

A. ALL SUPPORTS AND HANGERS FOR EQUIPMENT, DUCTWORK AND PIPING UNDER THIS CONTRACT SHALL BE FURNISHED AND INSTALLED BY THE CONTRACTOR.

B. ALL HANGERS, SUPPORTS, & HARDWARE SHALL BE GALVANIZED UNLESS OTHERWISE INDICATED.

C. WHERE EXCESSIVE LOADING REQUIRES PROPER DISTRIBUTION OF THE WEIGHT, PROPER SUPPORTS MUST BE PROVIDED, SUBJECT TO THE ARCHITECT'S APPROVAL. ALL SUPPORTS SHALL BE OF STRUCTURAL STEEL.

7.0 PIPING

7.1 CONDENSATE DRAIN PIPING

A. ALL PIPES SHALL BE NEW, FREE FROM SCALE OR RUST, OF THE MATERIAL AND WEIGHT SPECIFIED UNDER THE VARIOUS SERVICES. EACH LENGTH OF PIPE SHALL BE PROPERLY MARKED AT THE MILL FOR PROPER IDENTIFICATION WITH NAME OR SYMBOL OF MANUFACTURER.

B. ALL COPPER TUBING SHALL BE OF WEIGHT AS REQUIRED FOR SERVICE SPECIFIED, WITH CONFORMANCE WITH ASTM B-88 FOR TYPES "L" AND "K" TUBING, AS MANUFACTURED BY CHASE, ANACONDA, REVERE, OR APPROVED EQUAL. TUBING AND FITTINGS SHALL BE THOROUGHLY CLEANED WITH SAND CLOTH AND TREATED WITH AN APPROVED NON-CORROSIVE FLUX BEFORE SOLDER IS APPLIED.

C. COPPER TUBING JOINTS SHALL BE MADE WITH 95-5 SOLDER FOR WATER APPLICATIONS.

SERVICE	MATERIAL	SCHEDULE
OVERFLOW AND DRAIN	COPPER	TYPE L (HARD)

7.2 FITTINGS

A. FITTINGS SHALL BE OF MATERIAL CONFORMING TO THE FOLLOWING SCHEDULE: SOLDER FITTINGS ASTM B-88, 150 LBS. FOR WATER SERVICE & 300 LBS. FOR REFRIGERANT.

B. FLANGES SHALL BE RAISED FACE, OF THE SAME WEIGHT AS THE FITTINGS IN EACH SERVICE CATEGORY. ALL FLANGES SHALL BE DRILLED TO "US STANDARD" HEX NUTS AND WASHERS. BOLTING SHALL CONFORM TO ASTM 193 GRADE B-7, THREADS CLASS 7 FIT. NUTS SHALL BE SEMI-FINISHED HEXAGONAL, ANSI B18.2 ASTM A194 GRADE 2H.

7.3 PIPE HANGERS AND SUPPORTS

A. PROVIDE NECESSARY STRUCTURAL MEMBERS, HANGERS AND SUPPORTS OF APPROVED DESIGN TO KEEP PIPING IN PROPER ALIGNMENT AND PREVENT TRANSMISSION OF INJURIOUS THRUSTS AND VIBRATIONS. IN ALL CASES WHERE HANGERS, BRACKETS, ETC., ARE SUPPORTED FROM CONCRETE CONSTRUCTION, CARE SHALL BE TAKEN NOT TO WEAKEN CONCRETE OR PENETRATE WATERPROOFING. ALL HANGERS AND SUPPORTS SHALL BE CAPABLE OF SCREW ADJUSTMENT AFTER PIPING IS ERECTED. HANGERS SUPPORTING PIPING EXPANDING INTO LOOPS, BENDS AND OFFSETS SHALL BE SECURED TO THE BUILDING STRUCTURE IN SUCH A MANNER THAT HORIZONTAL ADJUSTMENT PERPENDICULAR TO THE RUN OF PIPING SUPPORTED MAY BE MADE TO ACCOMMODATE DISPLACEMENT DUE TO EXPANSION. ALL SUCH HANGERS SHALL BE FINALLY ADJUSTED, BOTH IN THE VERTICAL AND HORIZONTAL DIRECTION, WHEN THE SUPPORTED PIPING IS HOT, OR CHILLED, AS REQUIRED. ALL PIPE HANGERS, SUPPORTS, & HARDWARE SHALL BE GALVANIZED UNLESS OTHERWISE INDICATED. METAL TO METAL CONTACT IS TO BE AVOIDED. HANGERS IN CONTACT WITH COPPER SHALL BE COPPER PLATED STEEL.

B. PIPE HANGERS SHALL BE THE CLEVIS TYPE, EXCEPT WHERE OTHERWISE NOTED.

PIPE HANGER SCHEDULE:

PIPE	MAKE AND MODEL TYPE OF HANGER	GRINNELL FIG. NO.	F & M FIG. NO.	CARPENTER& PATERSON FIG. NO.
2" & SMALLER (COPPER)	ADJUSTABLE WROUGHT IRON	CT-65	364	100CT

C. HANGER RODS SHALL BE OF THE FOLLOWING DIAMETERS:

PIPE SIZE:	ROD DIAMETER:	MAXIMUM SPACING:
1 1/4" & BELOW	3/8"	6' - 0" (COPPER 8' - 0")

D. BEAM CLAMPS - HANGERS SUPPORTED FROM FLOOR STEEL SHALL BE APPROVED I BEAM CLAMPS. I BEAM CLAMPS FOR HANGERS SUPPORTING PIPING 2" AND SMALLER SHALL BE C & P FIG. NO. 148 ADJUSTABLE BEAM CLAMPS.

E. ALL VERTICAL PIPING SHALL BE ANCHORED BY MEANS OF HEAVY STEEL CLAMPS SECURELY BOLTED OR WELDED TO THE PIPING, AND WITH END EXTENSION BEARING ON THE BUILDING.

F. PIPING SHALL NOT BE HUNG FROM OTHER PIPING DUCTS, CONDUITS OR FROM EQUIPMENT OF OTHER TRADES AND NO VERTICAL EXPANSION SHIELDS WILL BE PERMITTED. HANGER RODS SHALL NOT PIERCE DUCTS.

G. WHERE ADDITIONAL STEEL IS REQUIRED FOR THE SUPPORT OF HANGERS, FURNISH AND INSTALL SAME SUBJECT TO THE APPROVAL OF THE ARCHITECT.

H. PIPING RUNNING ON WALLS SHALL BE SUPPORTED BY MEANS OF HANGER SUSPENDED FROM HEAVY ANGLE IRON WALL BRACKETS. NO WALL HOOKS WILL BE PERMITTED.

I. LATERAL BRACING OF HORIZONTAL PIPE SHALL BE PROVIDED WHERE REQUIRED TO PREVENT SIDE SWAY OR VIBRATION. THE LATERAL BRACING SHALL BE OF A TYPE APPROVED BY THE ARCHITECT AND SHALL BE INSTALLED WHERE DIRECTED BY THE ARCHITECT.

7.4 REFRIGERATION PIPING

A. UNLESS OTHERWISE NOTED, ALL REFRIGERATION PIPING SHALL BE REFRIGERATION ACR GRADE ANNEALED OR DRAWN TEMPER COPPER TUBING, DEGREASED, & SEALED.

B. FITTINGS SHALL BE WROUGHT COPPER OR FORGED BRASS AND ONLY LONG RADIUS ELBOWS OR OR FORMED LONG SWEEP ELBOWS SHALL BE USED. ALL CHANGES IN LINE SIZE SHALL BE ACCOMPLISHED WITH FITTINGS. ABSOLUTELY NO STAB-INS ARE PERMITTED.

C. ALL PIPING JOINTS SHALL BE BRAZED WITH SILVER SOLDER, WITH CONTINUOUS N2 PURGE.

D. PROTECTION OF THE PIPING SYSTEMS SHALL BE THIS CONTRACTOR'S RESPONSIBILITY. TEMPORARY PROTECTION SHALL BE PROVIDED UNTIL THE JOB IS IN SATISFACTORY CONDITION, AND PERMANENT PROTECTION SHALL BE PROVIDED BY THE BUILDING CONTRACTOR AS REQUIRED TO PROTECT THE PIPING, FITTING, ETC FROM DAMAGE.

E. INSTALL SCHRADER TYPE VALVES AT THE EVAPORATOR OUTLET OF EACH FIXTURE TO FACILITATE THE ADJUSTMENT OF SUPER HEAT SETTINGS AND TO ESTABLISH PRESSURE DROP. LIQUID LINES CAN BE AFFIXED TO THE SUCTION INSULATION VIA APPROVED DUCT TAPES.

F. SIZE, CHARGE, AND INSULATION OF ALL REFRIGERANT PIPING SHALL BE IN ACCORDANCE WITH THE EQUIPMENT MANUFACTURER'S INSTRUCTIONS.

7.5 REFRIGERATION VALVES

A. ALL VALVES FOR REFRIGERATION SERVICES SHALL BE DIAPHRAGM PACKLESS VALVES. FORGED BRASS OR CAST BRONZE, GLOBE DESIGN WITH STRAIGHT THROUGH OR ANGLE PATTERN. WORKING PRESSURE RATING: 500 PSIG. MAXIMUM OPERATING TEMPERATURE: 275°F.

8.0 INSULATION

8.1 PIPING INSULATION

A. THE FOLLOWING PIPING SHALL BE COVERED WITH FIBERGLASS INSULATION WITH VAPOR BARRIER OF THE FOLLOWING THICKNESS:

SERVICE	THICKNESS
CONDENSATE DRAIN	1/2"

B. INSULATION SHALL BE GLASS FIBER WITH A MAXIMUM K FACTOR OF 0.23 AT 75 DEGREES F. MEAN TEMPERATURE WITH FACTORY-APPLIED ALL SERVICE VAPOR BARRIER JACKET. DENSITY SHALL BE NOT LESS THAN 3 LBS. PER CUBIC FOOT.

C. INSULATION SHALL BE HEAVY DENSITY FIBERGLASS SECTIONAL PIPE INSULATION AS MADE BY OWENS-CORNING FIBERGLAS CORP. OR CSG'S "SNAP-ON" OR MANVILLE "FLAME SAFE" FIBERGLASS INSULATION.

D. ALL FITTINGS, VALVES AND FLANGES FOR PIPE SIZES SMALLER THAN 4" SHALL BE INSULATED WITH MOLDED FIBER GLASS FITTINGS OF SAME THICKNESS AS THE ADJOINING PIPE INSULATION, SECURED WITH NO. 20 GAUGE GALVANIZED ANNEALED STEEL WIRE ZESTON 25/50 PVC AS MADE BY MANVILLE, OR APPROVED EQUAL.

E. DIRECT CONTACT BETWEEN PIPE AND HANGER SHALL BE AVOIDED.

F. AT PIPE SUPPORTS INSULATION SHIELD PROTECTION SADDLES, HIGH DENSITY INSULATION SUPPORT BLOCKS, AND MATCHING HANGER SHALL BE USED.

G. ALL EXPOSED INSULATED PIPING IN BUILDING THAT IS WITHIN 7'-0" OF THE FINISHED FLOOR SHALL BE JACKETED WITH 0.016" THICK ALUMINUM WITH ½" ALUMINUM BARDS SPACED 18" O.C.

8.2 PVC INSULATED FITTING COVERS

A. THE CONTRACTOR SHALL HAVE OPTION TO USE ZESTON 25/50 RATED PVC COVERS AS MADE BY MANVILLE OR APPROVED EQUAL.

8.3 REFRIGERATION PIPING INSULATION

A. THE FOLLOWING PIPING SHALL BE COVERED WITH CLOSED CELL ELASTOMERIC INSULATION WITH VAPOR BARRIER OF THE FOLLOWING THICKNESS:

SERVICE	THICKNESS
REFRIGERANT PIPING	3/4"

B. INSULATION SHALL BE FLEXIBLE CLOSED CELL ELASTOMERIC WITH A MAXIMUM K FACTOR OF 0.27 AT 75 DEGREES F MEAN TEMPERATURE.

C. INSULATION SHALL BE MANUFACTURED BY ARMACELL LLC OR APPROVED EQUAL.

9.0 - EXECUTION

9.1 INSTALLATION

A. COORDINATE WITH OTHER WORK AS NECESSARY TO INTERFACE INSTALLATION OF PIPING WITH OTHER COMPONENTS OF SYSTEMS.

B. PROVIDE AND ERECT IN A WORKMANLIKE MANNER, ACCORDING TO THE BEST PRACTICES OF THE TRADE, ALL PIPING SHOWN ON THE DRAWINGS OR REQUIRED TO COMPLETE THE INSTALLATION INTENDED BY THESE SPECIFICATIONS.

C. THE DRAWINGS INDICATE SCHEMATICALLY THE SIZE AND LOCATION OF PIPING. PIPING SHALL BE SET UP AND DOWN AND OFFSET TO MEET FIELD CONDITIONS AND TO PROVIDE ADEQUATE MAINTENANCE ROOM AND HEADROOM IN THE SERVICE CORRIDOR.

D. ALL EXPOSED PIPING IN VIEW SHALL RUN PERPENDICULAR AND/OR PARALLEL TO FLOORS, INTERIOR WALLS, ETC. PIPING AND VALVES SHALL BE GROUPED NEATLY AND SHALL RUN SO AS TO AVOID REDUCING HEADROOM OR PASSAGE CLEARANCE. PROVIDE MIN. 7'-6" HEADROOM UNDER PASSAGEWAY IN SERVICE CORRIDOR. ALL VALVES, CONTROLS AND ACCESSORIES CONCEALED IN FURRED SPACES AND REQUIRING ACCESS FOR OPERATION AND MAINTENANCE SHALL BE ARRANGED TO ASSURE THE USE OF A MINIMUM NUMBER OF ACCESS DOORS.

E. ALL PIPING SHALL BE ERECTED AS TO INSURE A PERFECT AND NOISELESS CIRCULATION THROUGHOUT THE SYSTEM. NO BULL HEAD TEES WILL BE PERMITTED.

F. ALL VALVES AND SPECIALTIES SHALL BE PLACED SO AS TO PERMIT EASY OPERATION AND ACCESS.

G. ALL PIPING CONNECTIONS TO COILS AND EQUIPMENT SHALL BE MADE WITH OFFSETS PROVIDED WITH SCREWED OR WELDED BOLTED FLANGES SO ARRANGED THAT THE EQUIPMENT CAN BE SERVICED OR REMOVED WITHOUT DISMANTLING THE PIPING.

H. IF, AFTER FACILITY IS IN OPERATION, ANY COILS OR OTHER APPARATUS ARE STRATIFIED OR AIR BOUND (BY VACUUM OR PRESSURE), THEY SHALL BE REPIPED WITH NEW APPROVED AND NECESSARY FITTINGS, AIR VENTS, OR VACUUM BREAKERS AT NO EXTRA COST. IF CONNECTIONS ARE CONCEALED IN FURRING, FLOORS OR CEILINGS, BEAR ALL EXPENSES OF TEARING UP AND REFINISHING CONSTRUCTION AND FINISH, LEAVING SAME IN AS GOOD CONDITION AS BEFORE IT WAS DISTURBED.

I. FITTINGS SHALL BE OF THE ECCENTRIC REDUCING TYPE, WHERE CHANGES OF SIZE OCCUR IN HORIZONTAL PIPING TO PROVIDE FOR PROPER DRAINAGE OR VENTING.

J. TUBING SHALL BE ERECTED NEATLY IN A WORKMANLIKE MANNER. BENDS IN SOFT COPPER TUBING SHALL BE CREATED WITH BENDERS TO PREVENT DEFORMATION OF THE TUBING IN THE BENDS.

K. THE ENDS OF ALL PIPE AND NIPPLES SHALL BE THOROUGHLY REAMED TO THE FULL INSIDE DIAMETER OF THE PIPE AND ALL BURRS FORMED IN THE CUTTING OF THE PIPES SHALL BE REMOVED.

L. PIPING SHALL BE INSTALLED IN ACCORDANCE WITH THE LATEST EDITION OF THE ASME CODE FOR PRESSURE PIPING.

M. DISSIMILAR PIPING SHALL BE CONNECTED WITH DIELECTRIC FITTINGS BY THE PERFECTION CORPORATION (NO DIELECTRIC UNION).

9.2 TESTING OF PIPING

A. ALL NEW R-410A REFRIGERANT PIPING SHALL BE TESTED AS HEREINAFTER SPECIFIED:
   1. SUCTION LINES FOR HEAT-PUMP APPLICATIONS: 535 PSIG
   2. HOT-GAS & LIQUID LINES: 535 PSIG

10.0 SINGLE SPLIT AIR CONDITIONING (HEAT PUMP)

10.1 SYSTEM DESCRIPTION

A. THE VARIABLE CAPACITY, HEAT PUMP SYSTEM SHALL BE A DAIKIN INVERTER DRIVEN SERIES OR APPROVED EQUAL (HEAT/COOL MODEL) SPLIT SYSTEM. THE SYSTEM SHALL CONSIST OF A DUCTED CONCEALED EVAPORATOR MODEL FDMQ12RVJU EXCLUSIVELY MATCHED TO OUTDOOR MODEL RXL12QMVJU9.

10.2 WARRANTY

A. COMMERCIAL INSTALLATIONS: THIS WARRANTY APPLIES TO HEATING AND AIR CONDITIONING UNITS INSTALLED IN BUILDINGS OTHER THAN RESIDENCES AND COVERS DEFECTS IN MATERIALS AND WORKMANSHIP THAT APPEAR UNDER NORMAL USE AND MAINTENANCE. WARRANTY COVERAGE BEGINS ON THE DATE OF ACCEPTANCE. THE WARRANTY LASTS FOR A PERIOD OF 5 YEARS.

10.3 INDOOR UNIT

A. THE INDOOR UNIT SHALL BE FACTORY ASSEMBLED AND PRE-WIRED WITH ALL NECESSARY ELECTRONIC AND REFRIGERANT CONTROLS. BOTH LIQUID AND SUCTION LINES MUST BE INDIVIDUALLY INSULATED BETWEEN THE OUTDOOR AND INDOOR UNITS.

B. UNIT CABINET:
   1. THE INDOOR UNIT SHALL BE CONSTRUCTED OF HEAVY GAUGE GALVANIZED STEEL.
   2. THE UNIT SHALL BE INTERNALLY INSULATED AND SHALL BE CAPABLE OF INSTALLATION IN INDOOR ENVIRONMENTS UP TO 80% RELATIVE HUMIDITY WITHOUT REQUIRING ADDITIONAL FIELD INSTALLED INSULATION.

C. FAN:
   1. THE EVAPORATOR FAN SHALL BE AN ASSEMBLY CONSISTING OF A DIRECT-DRIVEN FAN BY A SINGLE MOTOR.
   2. THE FAN SHALL BE STATICALLY AND DYNAMICALLY BALANCED AND OPERATE ON A MOTOR WITH PERMANENT LUBRICATED BEARINGS.
   3. THE INDOOR FAN SHALL OFFER A CHOICE OF THREE SPEEDS, PLUS QUIET SETTING.
   4. THE UNIT SHALL BE EQUIPPED WITH INTERNAL CONTROLS TO ALLOW THE FAN MOTOR TO BE MANUALLY ADJUSTED, VIA FIELD SETTING, TO DELIVER AIRFLOW AT A VARIETY OF EXTERNAL STATIC PRESSURES. MODEL FDMQ12RVJU SHALL HAVE 13 AVAILABLE FAN CURVES. MODELS FDMQ18RVJU THROUGH FDMQ24RVJU SHALL HAVE 11 AVAILABLE FAN CURVES.

D. COIL:
   1. THE EVAPORATOR COIL SHALL BE A NONFERROUS, ALUMINUM FIN ON COPPER TUBE HEAT EXCHANGER.
   2. A CONDENSATE PAN SHALL BE PROVIDED UNDER THE COIL WITH A DRAIN CONNECTION.
      i. THE UNIT SHALL BE EQUIPPED WITH A FACTORY-INTEGRAL CONDENSATE LIFT MECHANISM CAPABLE OF 26-9/16 INCHES OF LIFT.
      CONTRACTOR SHALL PROVIDE THEIR OWN 2"MERV 13 FILTER KIT OR USE 2"MERV 13 FILTER KIT PROVIDED BY UNIT MANUFACTURER

E. ELECTRICAL:
   1. THE OUTDOOR UNIT SHALL BE POWERED WITH 208-230 VOLTS, 1 PHASE, AND 60 HERTZ POWER. THE INDOOR UNIT SHALL RECEIVE 208-230 VOLT, 1 PHASE, 60 HERTZ POWER FROM THE OUTDOOR UNIT.
   2. THE ALLOWABLE VOLTAGE RANGE SHALL BE 187 VOLTS TO 253 VOLTS.

F. CONTROL:
   1. THE UNIT SHALL HAVE A WIRED TYPE REMOTE CONTROLLER

G. SOUND:
   1. INDOOR UNIT SOUND LEVELS ARE AS FOLLOWS:

INDOOR DAIKIN MODEL:	COOLING MODE SOUND LEVEL DB(A):	HEATING MODE SOUND LEVEL DB(A):
FDMQ18RVJU	35	35

*VALUES ARE MEASURED APPROXIMATELY 5 FEET AWAY WITH FAN SPEED ON HIGH, APPROXIMATELY 6.6 FT OF SUPPLY DUCT, AND 3.3 FT OF RETURN DUCT.

10.4 OUTDOOR UNIT

A. GENERAL:
   THE OUTDOOR UNIT SHALL BE SPECIFICALLY MATCHED TO THE CORRESPONDING INDOOR UNIT SIZE. THE OUTDOOR UNIT SHALL BE COMPLETE FACTORY ASSEMBLED AND PRE-WIRED WITH ALL NECESSARY ELECTRONIC AND REFRIGERANT CONTROLS. UNIT CABINET:
   1. THE OUTDOOR UNIT SHALL BE COMPLETELY WEATHERPROOF AND CORROSION RESISTANT. THE UNIT SHALL BE CONSTRUCTED FROM RUST-PROOFED MILD STEEL PANELS COATED WITH A BAKED ENAMEL FINISH.

B. FAN:
   1. THE FAN SHALL BE A DIRECT DRIVE, PROPELLER TYPE FAN.
   2. THE MOTOR SHALL BE INVERTER DRIVEN, PERMANENTLY LUBRICATED TYPE BEARINGS, INHERENT.

C. COIL:
   1. THE OUTDOOR COIL SHALL BE NONFERROUS CONSTRUCTION WITH CORRUGATED FIN TUBE.
   2. THE FINS ARE TO BE COVERED WITH AN ANTI-CORROSION ACRYLIC RESIN AND HYDROPHILIC FILM TYPE E1, RATED FOR UP TO 1000 HOURS SALT SPRAY.
   3. AUTOMATIC DEFROST WILL REMOVE ANY FROST FROM THE OUTDOOR UNIT ALLOWING THE SYSTEM TO MAINTAIN HEATING CAPACITY.

D. COMPRESSOR:
   1. THE OUTDOOR COMPRESSOR SHALL BE A PATENTED, VARIABLE SPEED DAIKIN SWING INVERTER-DRIVEN COMPRESSOR. THE ONE PIECE ACTION REDUCES NOISE, EXTENDS LIFE, BOASTS HIGHER EFFICIENCY AND REDUCES ENERGY CONSUMPTION.
   2. THE OUTDOOR UNIT CAN OPERATE WITH A MAXIMUM VERTICAL HEIGHT DIFFERENCE OF 65-5/8 FEET AND OVERALL MAXIMUM LENGTH OF 98-1/2 FEET WITHOUT ANY OIL TRAPS OR ADDITIONAL COMPONENTS.
   3. THE COMPRESSOR SHALL HAVE A QUICK-WARMING FUNCTION TO PREVENT PUMPING LIQUID REFRIGERANT IN LOW-AMBIENT CONDITIONS.

E. ELECTRICAL:
   1. THE ELECTRICAL POWER REQUIREMENT IS 208-230 VOLT, 1-PHASE, AND 60 HZ POWER.

F. SOUND:
   1. OUTDOOR UNIT SOUND LEVELS SHALL NOT EXCEED:

OUTDOOR DAIKIN MODEL:	COOLING MODE SOUND LEVEL dB(A):	HEATING MODE SOUND LEVEL dB(A):
RXL18UMVJUA	54	55

*VALUES ARE BASED ON HIGH FAN SPEED AND ARE MEASURED APPROXIMATELY 3 FEET AWAY.

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NJDOE SP # 2670-050-19-1000

BUILDING ENTRANCES
SECURITY ENHANCEMENTS

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LINDENWOLD, NJ 08021

TITLE: SPECIFICATIONS - HVAC

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SCHOOL 5

H300

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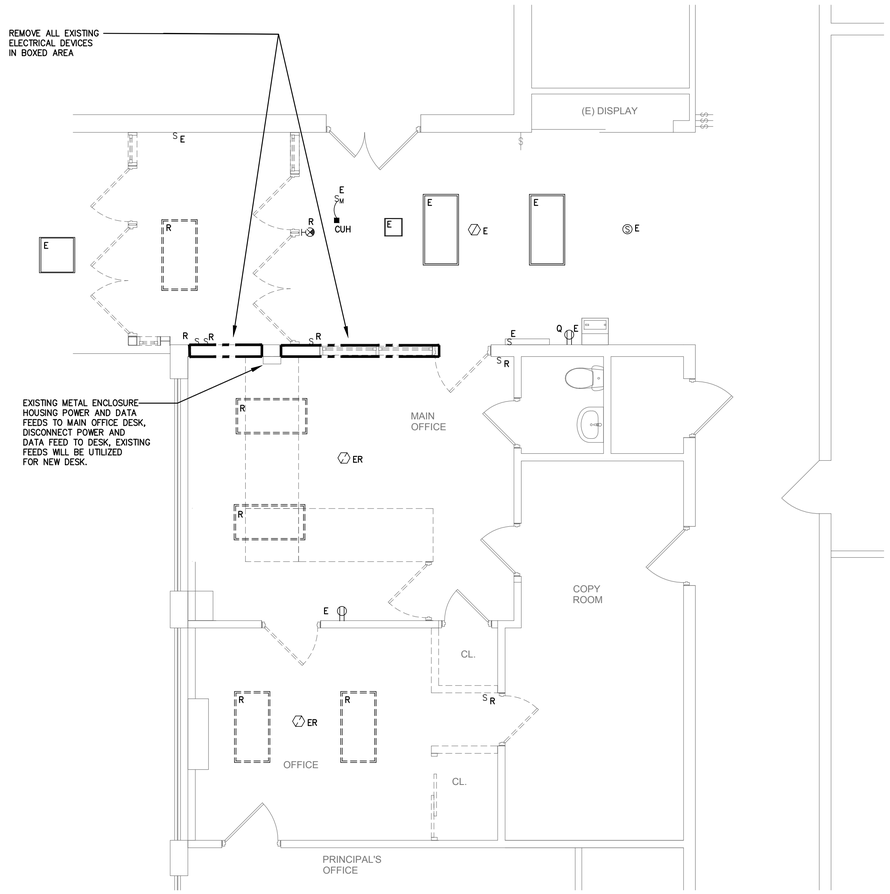


1 / E100 PARTIAL FLOOR PLAN – ELECTRICAL DEMOLITION

SCALE 1/4" = 1'-0"

NOTE:

1. EXISTING DEVICES ARE PRESENT THAT ARE BEING REMOVED/RELOCATED VIA THE OWNER, THESE ARE NOT SHOWN, REFER TO GENERAL NOTES AND ARCHITECTURAL DRAWINGS, TYPICAL.

SYMBOL LIST & ABBREVIATIONS

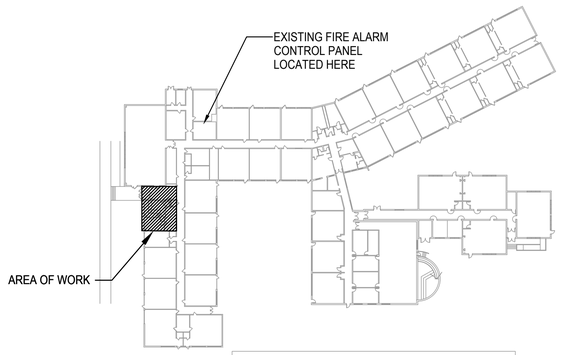
	LIGHT FIXTURE – SEE LIGHTING FIXUTRE SCHEDULE
	LIGHT FIXTURE WITH INTEGRAL BATTERY BACKUP – SEE LIGHTING FIXTURE SCHEDULE
	EXIT SIGN – SEE LIGHTING FIXTURE SCHEDULE
OS	OCCUPANCY SENSOR – LETTER DENOTES TYPE OF SENSOR TO BE INSTALLED WATTSTOPPER OR APPROVED EQUAL, REFER TO AUTOMATIC LIGHTING CONTROL NOTES, PROVIDE ALL HARDWARE AND PROGRAMMING AS REQUIRED. CI = CI–300 PASSIVE INFRARED SENSOR
PP	POWER PACK TRANSFORMER AND RELAY, OUTPUT RELAYS RATED 20A BALLAST OR INCANDESCENT, PROVIDE QUANTITY OF RELAYS AS REQUIRED, REFER TO AUTOMATIC LIGHTING CONTROL NOTES.
GFI	DUPLEX RECEPTACLE, 20A, 125V, 2 POLE, U–GROUND SLOT, GFI INDICATES GROUND FAULT INTERRUPTION
	DUPLEX RECEPTACLE MOUNTED ABOVE COUNTER HEIGHT
S	SINGLE POLE SWITCH
	MANUAL MOTOR STARTER
S_M	UNFUSED DISCONNECT SWITCH
	208/120V PANELBOARD
	MOTOR
FACP	FIRE ALARM, CONTROL PANEL
RA	FIRE ALARM, REMOTE ANNUNCIATOR PANEL
F	FIRE ALARM, MANUAL PULL STATION
H	FIRE ALARM, HEAT DETECTOR FIXED TEMPERATURE AND RATE–OF–RISE
	FIRE ALARM, SMOKE DETECTOR PHOTOELECTRIC
F	FIRE ALARM SPEAKER/STROBE
	FIRE ALARM, VISUAL DEVICE
PS	POWER SUPPLY
	WIRE & CONDUIT, CONCEALED IN CEILING OR WALL
	HOMERUN TO PANEL, NUMERAL INDICATES CIRCUIT NUMBER
	CONNECTION TO EQUIPMENT
AC	AIRCONDITIONER
AFF	ABOVE FINISHED FLOOR
CP	CONDENSATE PUMP
CUH	CEILING UNIT HEATER
CU	CONDENSING UNIT
E	EXISTING
R	EXISTING TO BE RELOCATED
ER	EXISTING TO BE REMOVED
RL	RELOCATE EXISTING TO THIS LOCATION, COORDINATE EXACT LOCATION IN FIELD, PROVIDE NEW WIRING TO EXTEND EXISTING WIRING AS REQUIRED, MATCH EXISTING WIRING TYPE AND SIZE

GENERAL NOTES:

1. THE DISTRICT WILL BE RESPONSIBLE TO REMOVE AND RELOCATE ALL EXISTING FIRE ALARM DEVICES, TIME CLOCKS, PHONE LINES, BURGLAR ALARMS, SECURITY/TV, ETC.
2. THE CONTRACTOR FOR THE VESTIBULE–BID WORK WILL PROVIDE THE ELECTRIFIED DOOR HARDWARE AS PART OF THE NEW DOORS AND STOREFRONTS, HOWEVER THE DISTRICT'S SECURITY VENDOR WILL BE REQUIRED TO WIRE THE HARDWARE BACK TO THEIR AIPHONE OR OTHER METHOD OF RETRACTING THE DOOR LOCKS.

DEMOLITION NOTES:

1. THESE DEMOLITION PLANS ARE INTENDED TO BE USED AS A GUIDE TO THE CONTRACTOR. ALL DEMOLITION WORK REQUIRED, OR NECESSARY FOR THE INSTALLATION OF NEW WORK OR THE REMOVAL OF EXISTING EQUIPMENT, IS HEREBY INCLUDED, WHETHER SHOWN ON THESE PLANS OR NOT. REFER TO DRAWINGS OF ALL TRADES FOR ADDITIONAL WORK, AND COORDINATE IN THE FIELD.
2. THE CONTRACTOR SHALL VERIFY ACTUAL SITE CONDITIONS PRIOR TO SUBMITTING HIS BID. THE CONTRACTOR SHALL INCLUDE ALL DEMOLITION WORK NECESSARY FOR THE EFFECTIVE INSTALLATION AND PERFORMANCE OF NEW SYSTEMS. THE CONTRACTOR SHALL ALSO INCLUDE TEMPORARY REMOVAL AND REINSTALLATION OF EXISTING WORK WHEREVER NECESSARY. THE OWNER SHALL NOT ACCEPT EXTRA COSTS ASSOCIATED WITH THE DEMOLITION AND/OR TEMPORARY REMOVAL/REINSTALLATION WORK FROM THE CONTRACTOR.
3. THIS CONTRACTOR SHALL REMOVE ALL LIGHTING FIXTURES AND ELECTRICAL DEVICES AS INDICATED ON THE DEMOLITION PLANS, OR THAT ARE NO LONGER NEEDED BY THE OWNER. ALL EXISTING WIRING AND CONDUIT WHERE NO LONGER REQUIRED SHALL BE REMOVED BACK TO EXISTING PANEL. ALL EXISTING DISCONNECTED CIRCUITS NOT BEING REUSED SHALL BE TURNED OFF AND LABELED "SPARE". WHERE CONDUITS ARE INACCESSIBLE, REMOVE WIRE AND ABANDON CONDUITS.
4. IT IS THE CONTRACTORS RESPONSIBILITY TO VERIFY POWER IS BEING PROVIDED TO ALL EXISTING EQUIPMENT REQUIRED TO REMAIN IN SERVICE. RECONNECT ALL DISTURBED FACILITIES WHICH ARE EXISTING TO REMAIN AND PLACE THEM IN OPERATIONAL CONDITION.
5. REMOVE ALL WIRING DEVICES FROM WALLS TO BE DEMOLISHED. REMOVE EXISTING LIGHT SWITCHES WHERE NO LONGER REQUIRED. REUSE ALL EXISTING CONCEALED CONDUIT AND RECESSED DEVICE BOXES WHERE POSSIBLE. ABANDON BOXES IF THEY ARE IN EXISTING WALLS TO REMAIN. PATCH WALLS OVER ABANDONED BOXES TO MATCH ADJACENT SURFACES.
6. REMOVE ABANDONED OUTLET BOXES, SURFACE METAL RACEWAY AND CONDUIT THAT WOULD BE EXPOSED, AND REPAIR DISTURBED SURFACES TO MATCH ADJACENT AREAS.
7. MAJOR PIECES OF EQUIPMENT ARE TO BE TURNED OVER TO THE OWNER FOR HIS USE, OR AT THE OWNER'S DISCRETION, REMOVED FROM THE SITE AND DISPOSED OF, IF NO LONGER REQUIRED.
8. PATCH ALL WALLS TIGHT AT REMOVALS. MAINTAIN FIRE RATINGS AS REQUIRED.
9. THE CONTRACTOR SHALL REFER TO THE ARCHITECTURAL DRAWINGS FOR THE EXTENT OF WALL FINISHES AND CEILINGS TO BE REPLACED. ALL EXISTING DEVICES TO REMAIN SHALL BE TEMPORARILY DISCONNECTED AND REINSTALLED. WHERE TEMPORARY REMOVAL IS NOT POSSIBLE THE CONTRACTOR SHALL PROVIDE TEMPORARY SUPPORT OF EXISTING EQUIPMENT IN PLACE.
10. THE EXISTING FIRE ALARM SYSTEM SHALL BE MAINTAINED THROUGHOUT DEMOLITION AND CONSTRUCTION. PROVIDE TEMPORARY SUPPORT OF EXISTING DEVICES AS REQUIRED. THE CONTRACTOR SHALL NOTIFY THE FIRE MARSHAL UPON ANY MODIFICATIONS TO OR ANY NECESSARY INTERRUPTION IN SYSTEM OPERATION. NOTE THAT COVERING DEVICES DURING CONSTRUCTION IS AN INTERRUPTION TO COVERAGE.



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BUILDING ENTRANCES
SECURITY ENHANCEMENTS

LINDENWOLD SCHOOL 5
550 CHEWS LANDING ROAD
LINDENWOLD, NJ 08021

TITLE: PARTIAL FLOOR PLAN & SYMBOL LIST - ELECTRICAL

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DRAWN BY:	LA
COMMISSION NO.:	5643A

SCHOOL 5

E100

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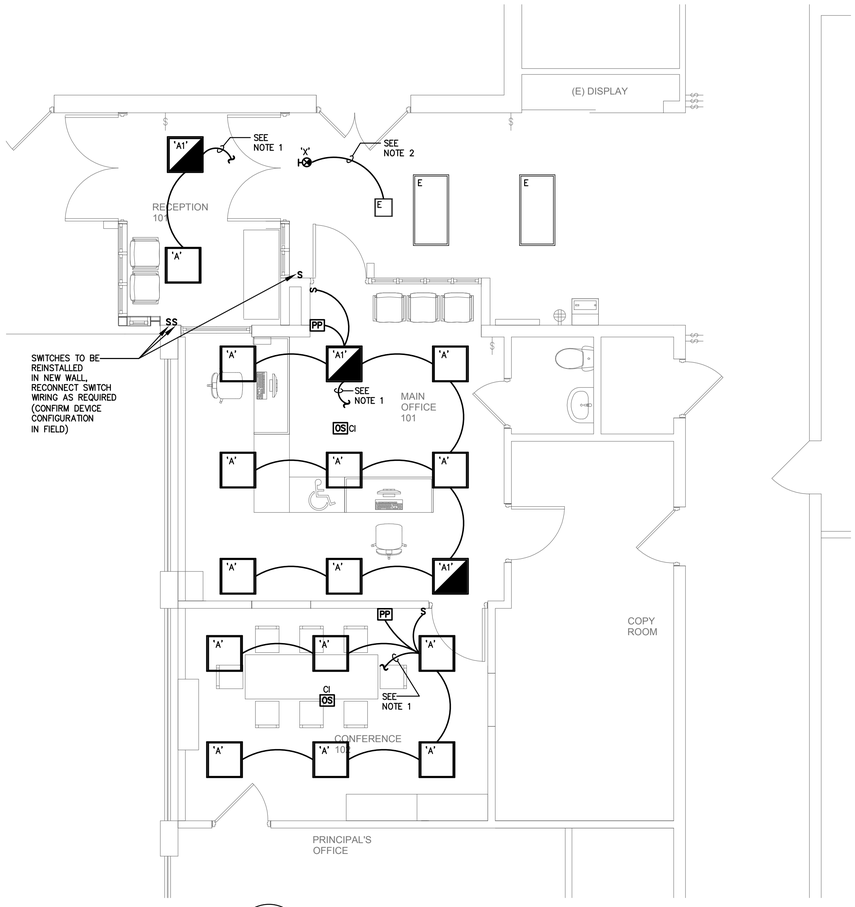


2 / E101 PARTIAL FLOOR PLAN – LIGHTING

SCALE 1/4" = 1'-0"

NOTES:

1. PROVIDE AND CONNECT TO EXISTING CIRCUIT, PREVIOUSLY CIRCUITING DEMOLISHED LIGHTING, CIRCUIT VIA 2 #12 & 1 #12 – 3/4"C.
2. CONNECT TO EXISTING LIGHTING CIRCUIT IN CORRIDOR, CIRCUIT VIA 2 #12 & 1 #12 GRD – 3 /4"C.

LIGHTING FIXTURE SCHEDULE

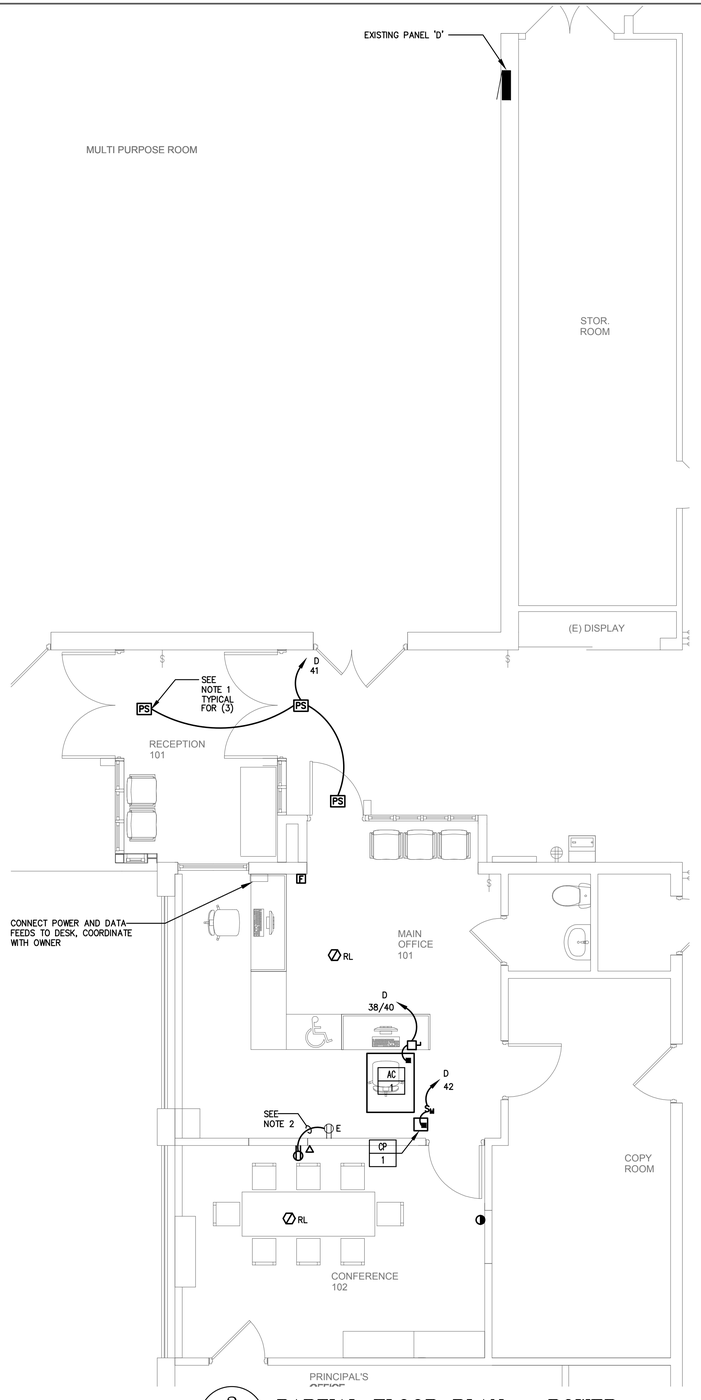
ID	LAMPS	MANUF.	CAT. NO.	MOUNTING	DESCRIPTION
A	(1)–38W LED SPX 35	METALUX	22RTC–48–UNV–L835–CD–U	RECESSED	2'x2' BASKETED FIXTURE, ACRYLIC PRISMATIC LENS, DIE FORMED HOUSING, WHITE ENAMEL FINISH, 120V INPUT
A1	(1)–38W LED SPX 35	METALUX	22RTC–48–UNV–EL14W–L835–CD–U	RECESSED	2'x2' BASKETED FIXTURE, ACRYLIC PRISMATIC LENS, DIE FORMED HOUSING, WHITE ENAMEL FINISH, 90 MINUTE EMERGENCY BATTERY BACKUP, 120V INPUT

LIGHTING FIXTURE NOTES:

1. ALL FIXTURES SPECIFIED WITH EMERGENCY BACKUP SHALL BE PROVIDED WITH AN ADDITIONAL 120V/1P SIGNAL TO MONITOR NORMAL POWER FAILURE.
2. CONNECT ALL EXIT SIGNS AND EMERGENCY BATTERY PACKS AHEAD OF ALL SWITCHING AND LIGHTING CONTROL.

AUTOMATIC LIGHTING CONTROL NOTES:

1. FURNISH AND INSTALL ALL OCCUPANCY SENSORS AND ACCESSORIES AS RECOMMENDED BY THE MANUFACTURER'S WRITTEN WIRING INSTRUCTIONS.
2. PROVIDE ALL RELAYS, POWER PACKS AND LOW VOLTAGE WIRING AS REQUIRED. COORDINATE QUANTITY OF RELAYS & POWER PACKS IN THE FIELD AND PROVIDE AS REQUIRED.
3. VERIFY ALL OCCUPANCY SENSORS TO BE FURNISHED AND INSTALLED WITH LOW VOLTAGE OR LINE VOLTAGE INPUTS. LINE VOLTAGE OCCUPANCY SENSORS SHALL BE INSTALLED IN PARALLEL FOR THE COMMON CONTROL OF A SINGLE SPACE.
4. THE CONTRACTOR SHALL SET ALL PROGRAMMABLE TIME DELAYS TO A MINIMUM OF 15 MINUTES UNLESS OTHERWISE NOTED. ALL OCCUPANCY SENSORS WITH AN AUTOMATIC SENSITIVITY SETTING SHALL BE SET TO AUTOMATIC UNLESS A REDUCED SENSITIVITY SETTING IS RECOMMENDED BY THE MANUFACTURER OR REQUESTED BY THE OWNER. ALL OCCUPANCY SENSORS WITH A SELECTABLE WALK–THROUGH MODE SHALL BE SET TO THIS MODE.

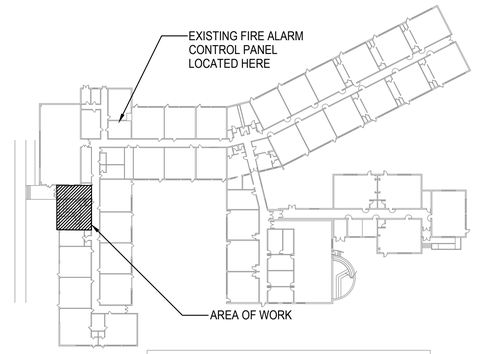


2 / E101 PARTIAL FLOOR PLAN – POWER

SCALE 1/4" = 1'-0"

NOTES:

1. PROVIDE CONDUIT AND PULLWIRE FROM POWER SUPPLY TO ACCESS CONTROL DEVICES, INCLUDING BUT NOT LIMITED TO CARD READER, INTERCOM, ELECTRIC STRIKE, DOOR CONTACTS AND REQUEST TO EXIT. FIELD COORDINATE WITH SCHOOL'S IT VENDOR. ACCESS CONTROL DEVICES AND WIRING WILL BE BY SCHOOL'S IT VENDOR.
2. PROVIDE AND CONNECT TO EXISTING 120V, 20A, RECEPTACLE CIRCUIT VIA 2 #12 & 1 #12 GRD – 3/4"C.



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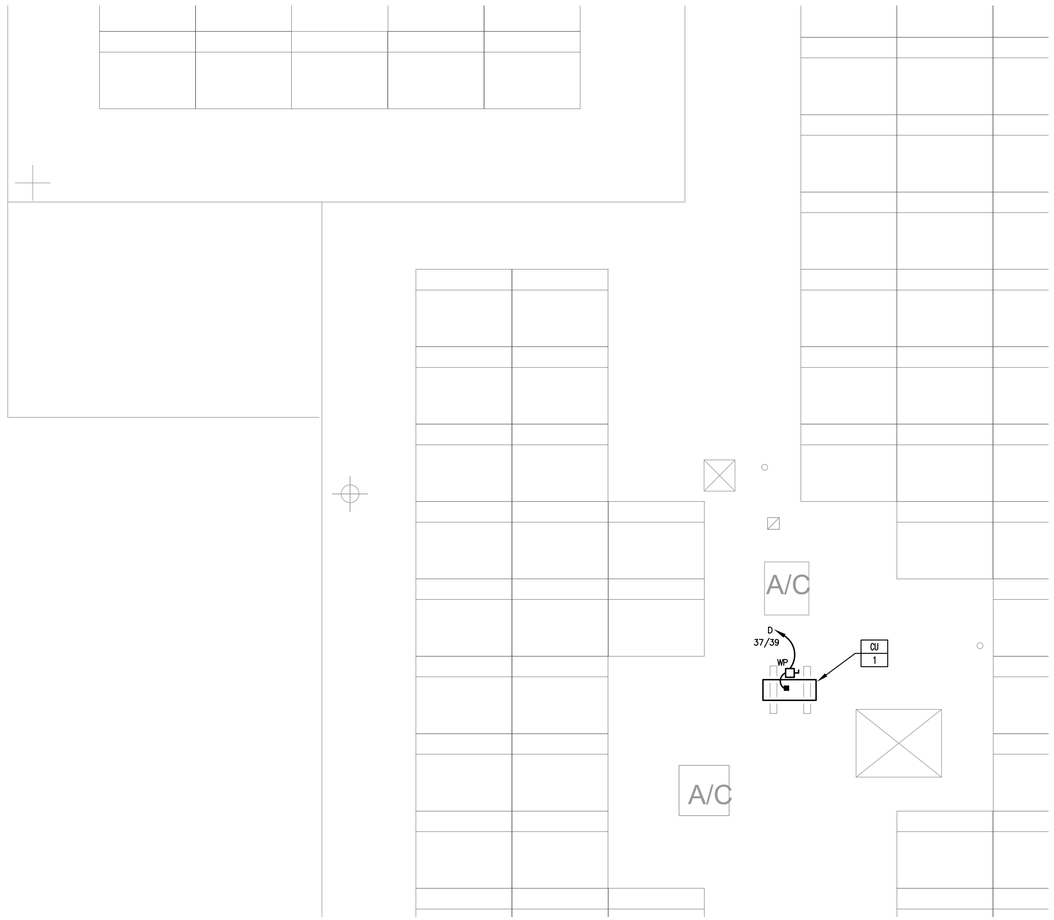
2 OF 4



1 E102 ROOF PLAN – ELECTRICAL

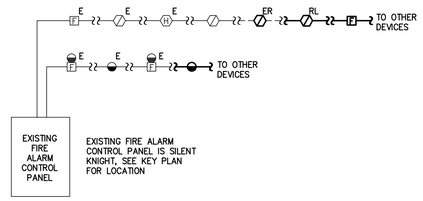
SCALE 1/4" = 1'-0"

EXISTING PANELBOARD 'D'

208/120V, 3ø, 4W, S/N, SURFACE, 225A MAIN LUGS ONLY

	CKT#	DESCRIPTION	LOAD KVA	CIR. BREAKER POLES	CIR. BREAKER AMP	WIRE & CONDUIT	ø A ø B ø C	WIRE & CONDUIT	CIR. BREAKER AMP	CIR. BREAKER POLES	LOAD KVA	DESCRIPTION	CKT#	
	1	LTG. BACK ROW STAGE	–	1	20	EXISTING		EXISTING	20	1	–	LTG. 5TH ROW MPR	2	
	3	LTG. FRONT ROW STAGE	–	1	20	EXISTING		EXISTING	20	2	–	–	4	
	5	LTG. 7TH ROW	–	1	20	EXISTING							6	
	7	–	–	1	20	EXISTING		EXISTING	20	1	–	–	8	
	9	–	–	1	20	EXISTING		EXISTING	20	1	–	–	10	
	11	–	–	1	20	EXISTING		EXISTING	20	2	–	–	12	
	13	–	–	1	20	EXISTING							14	
	15	–	–	1	20	EXISTING		EXISTING	20	1	–	–	16	
	17	–	–	1	20	EXISTING		EXISTING	20	1	–	–	18	
	19	–	–	1	20	EXISTING		EXISTING	20	1	–	–	20	
	21	SPACE	–	1	–	–		EXISTING	20	1	–	–	22	
	23	–	–	2	30	EXISTING		EXISTING	20	1	–	–	24	
	25							EXISTING	20	1	–	–	26	
	27	–	–	1	20	EXISTING		EXISTING	20	1	–	–	28	
	29	–	–	1	20	EXISTING		EXISTING	20	1	–	–	30	
	31	FAN OVER RANGE	–	3	20	EXISTING		EXISTING	20	1	–	–	32	
	33							EXISTING	20	1	–	–	34	
	35							EXISTING	20	1	–	–	36	
*	37	CU-1	–	2	20	2 #12 & 1 #12 GRD – 3/4"C		2 #12 & 1 #12 GRD – 3/4"C	20	2	–	AC-1	38	*
	39												40	
*	41	DOOR POWER SUPPLIES	–	1	20	2 #12 & 1 #12 GRD – 3/4"C		2 #12 & 1 #12 GRD – 3/4"C	20	1	–	CP-1	42	*
		SUB TOTAL KVA	–								–	SUB TOTAL KVA		

– TOTAL CONNECTED LOAD

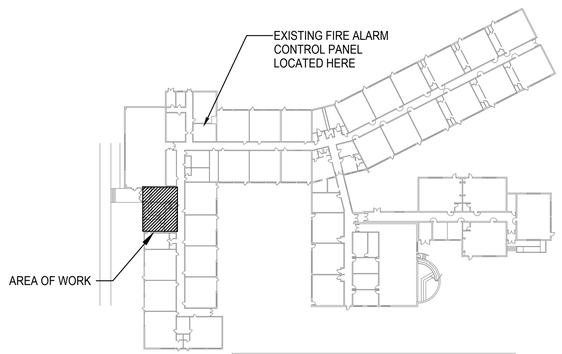


2 E102 FIRE ALARM SYSTEM RISER DIAGRAM

SCHEMATIC

FIRE ALARM SYSTEM NOTES:

1. PROVIDE ALL WIRING AS RECOMMENDED BY MANUFACTURER. ALL WIRING SHALL MATCH EXISTING.
2. CONTRACTOR IS RESPONSIBLE FOR INSURING THAT FIRE ALARM SYSTEM MODIFICATIONS MEET ALL APPLICABLE CODES AND FOR OBTAINING FINAL APPROVAL FROM LOCAL FIRE INSPECTOR(S).
3. PRIOR TO STARTING WORK, PREPARE SHOP DRAWINGS INCLUDING ALL INFORMATION REQUIRED UNDER IBC–2018, SECTION 907.1.2. SUBMIT SHOP DRAWINGS TO ENGINEER FOR REVIEW AND APPROVAL. ONCE APPROVED, SUBMIT SHOP DRAWINGS TO CODE REVIEWER/INSPECTOR(S) FOR APPROVAL.
4. EXPAND EXISTING FIRE ALARM SYSTEM AS REQUIRED TO CONNECT NEW DEVICES. PROVIDE ALL NEW HARDWARE, RELAYS, MODULES, WIRING, BATTERIES, ETC., AS NECESSARY FOR COMPLETE INSTALLATION.
5. PROVIDE ALL PROGRAMMING BY A FACTORY CERTIFIED VENDOR AS REQUIRED TO MAKE THE NECESSARY MODIFICATION TO THE SYSTEM. INCLUDE ANY HARDWARE, WIRING, OF COMPONENTS NECESSARY FOR CONTINUED REUSE.
6. PROVIDE AT EACH LOCATION SHOWN, AUDIO/VISUAL DEVICES WITH OUTPUT LEVELS AS RECOMMENDED BY MANUFACTURER FOR THE SPACE TO COMPLY WITH ADA & CODE REQUIREMENTS. PROVIDE ADDITIONAL DEVICES TO THOSE SHOWN IF/AS REQUIRED TO MEET LEVELS AT NO ADDITIONAL COST.
7. ALL FIRE ALARM CONTROL PANELS, REMOTE ANNUNICIATORS, AND BOOSTER PANELS SHALL HAVE SMOKE DETECTORS COVERAGE ABOVE. PROVIDE DEVICES WHETHER SHOWN ON PLANS OR NOT.
8. UPON COMPLETION OF FIRE ALARM WORK, PROVIDE A RE–ACCEPTANCE TEST OF THE ENTIRE SYSTEM PER NFPA 72.



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NJDOE SP # 2670-050-19-1000

BUILDING ENTRANCES
SECURITY ENHANCEMENTS

LINDENWOLD SCHOOL 5
550 CHEWS LANDING ROAD
LINDENWOLD, NJ 08021

TITLE: PARTIAL ROOF PLAN, SCHEDULE AND DIAGRAM - ELECTRICAL

DRAWING DATE: 26 FEB 2021
REVISION DATE:
DRAWN BY: LA
COMMISSION NO.: 5643A

SCHOOL 5

E102

3 OF 4

GENERAL REQUIREMENTS

This Section is coordinate with and complementary to the General Conditions and Special Requirements.

Drawings are diagrammatic. Sizes and locations of equipment are shown to scale where possible, but may be distorted for clarity on the Drawings. Final locations shall be as required or directed.

Light and power and system riser diagrams and schematic diagrams generally indicate equipment and connections to be used for various systems. System conduit and wiring shall be as required. Provide all work shown on diagrams whether or not it is duplicated on the plans.

SCOPE OF WORK

In general the work includes, but is not limited to the following:

1. Raceways and installation components.
2. Wire and Cable.
3. Panelboards (modifications)
4. Safety and disconnect switches.
5. Manual motor starters.
6. Grounding.
7. Lighting fixtures.
8. Electrical provisions for fire and life safety.
9. Fire alarm system (modifications).
10. Testing.
11. Seismic restraints.
12. Furnishing of access doors.
13. Furnishing and setting of all sleeves through the floors, roof, and walls where required, including waterproofing, and fireproof sealing, and cap flashing.
14. Cutting, drilling and boring associated with electrical work.
15. Prime painting, where required for electrical equipment and installation.
16. Final connection of all equipment unless otherwise noted.

QUALITY ASSURANCE AND STANDARDS

The complete installation shall be in accordance with NJUCC (The State Building Code).

Contractor to be responsible for securing all necessary permits and obtaining all necessary approvals. He shall complete all necessary forms and pay all necessary fees.

SUBMITTALS

The Contractor shall submit shop drawings for all systems and components with such promptness as to cause no delay in his own work or that of another contractor.

EXAMINATION OF EXISTING CONDITIONS ON PREMISES

Before submitting his bid, this Contractor shall visit the site of the work and shall thoroughly familiarize himself with the existing conditions affecting the work. By the act of submitting a bid, the Contractor shall be deemed to have made such an examination, to have accepted such conditions, and to have made allowance therefore in preparing his bid. No additional compensation will be granted on account of extra work made necessary by the Contractor's failure to investigate such existing conditions. Verify all grades, elevations, dimensions, and clearances at the site.f

COORDINATION OF WORK WITH OTHER TRADES

The contractor shall coordinate the work of this Section with the work of all other Contracts and all the Utility Companies. It shall be so arranged that there will be no delay in the proper installation and completion of all work.

INSPECTION AND TESTS

The entire wiring system must test free from short and open circuits. Every ground shall be tested for compliance with standards listed below.

PROTECTION, MAINTENANCE AND PRODUCT HANDLING OF ELECTRICAL EQUIPMENT

Electrical equipment shall be delivered and stored at the site, properly packed and crated until finally installed.

Provide effective protection against damage for all material and equipment during shipment and storage at the Project Site.

This Contractor shall be responsible for the maintenance of all installed equipment and systems until final acceptance by the Owner.

GUARANTEE

This Contractor shall guarantee in writing to the Owner that all work installed by him shall be free of defects in workmanship and materials and that all apparatus will develop the capacities and characteristics as indicated, and that, if during a period of two years from date of final approval of work by the Architect, any defects in workmanship, materials or performance appear, he will remedy them without any cost to the Owner.

ACCESSIBILITY AND MEASUREMENTS

All work shall be installed so as to be readily accessible for operation, maintenance, and repair. Minor deviations from the plans may be made to accomplish this, subject to approval.

Before ordering any material or doing any work, the Contractor shall verify all measurements at the Building, and shall be responsible for the correctness of same as related to the work under this Contract.

IDENTIFICATION NAMEPLATES

Identify and mark all electrical equipment to meet OSHA standards and as specified herein.

Unless otherwise noted, nameplates shall be black laminate with white letters of uniform size consisting of reasonably large capital letters, 3/16 inch minimum.

SEISMIC RESTRAINTS

Provide lateral restraints for all electrical equipment installed on project; i.e., Battery racks, ballast racks, cable trays, conduit, generators, lighting fixtures, panels and transformers. Typically, lateral restraints shall consist of angle iron and "uni-strut" bracing, cross bracing, hanger rods, anchor clips, expansion shield anchor bolts, etc. The purpose of the restraints is to provide resistance to lateral (horizontal) movement during earthquake.

All equipment shall be anchored to the floor, ceiling structure or walls.

All suspended equipment, wiring trough and conduit trade size 2-1/2" or larger shall have (lateral) horizontal bracing capable of resisting 50% of the equipment weight. Horizontal bracing shall be placed at each point where vertical supports are specified or required.

All life safety equipment, and conduit shall have lateral bracing capable of resisting 100% of the equipment weight.

Stem mounted fixtures shall have stems and swivel canopies designed for seismic loads. Ceiling outlet boxes and hangers for stem-mounted fixtures shall have lateral bracing capable of withstanding full vertical load. Lateral bracing shall be attached to the ceiling (at an angle) or wall structure.

Recessed and surface mounted light fixtures must be secured to the ceiling system so as to resist 50 % of their weight laterally; i.e. a 40 pound fixture must be resistant to a 20 pound lateral force. Life safety lighting fixture must be secured to the ceiling system so as to re-sit 100% of their weight laterally. Suitable anchor clips must be provided for all lay-in fixtures. Surface mounted fixtures must be supported at two points in addition to the outlet box.

RACEWAYS AND INSTALLATION COMPONENTS

The requirements of this Section apply to raceway work specified elsewhere in these specifications.

The work includes the providing of completely coordinated grounded raceway systems complete with boxes, fittings, flexible connections to vibrating equipment and accessories, as specified and as required for a complete system.

The work permits the use of metal-clad cable in conjunction with conduit. See below.

Raceways and fittings shall be manufactured by Triangle or approved equal by Allied or Republic.

Rigid steel conduit shall be full weight steel pipe, hot dip galvanized inside and outside, threaded, minimum 3/4 inch.

Intermediate metal conduit (IMC) shall be intermediate steel pipe, hot dip galvanized, threaded, minimum 3/4 inch.

Electric metallic tubing (EMT) shall be steel thin wall pipe, galvanized, threadless, minimum 3/4 inch, maximum 2 inch.

Flexible steel conduit (Greenfield) shall be continuous single strip, galvanized, minimum 3/4 inch.

Liquid-tight flexible steel conduit (Seal-tite) shall be zinc coated, consist of flexible galvanized steel tubing over which is extruded a liquid-tight sheathing of polyvinyl chloride (PVC). Conduit shall be provided with a continuous copper bonding conductor would spirally between the convolutions.

Rigid steel and IMC conduit fittings shall be standard threaded couplings, locknuts, bushings, and elbows. Material shall be steel or malleable iron only.

Electrical metallic tubing fittings shall be compression waterproof connection type. Set screw or indent type connectors are not permitted.

Flexible steel conduit (Greenfield) fittings shall be multiple point type, threading into the internal wall of the conduit convolutions, and shall have insulated throat.

Liquid-tight flexible metal conduit fittings shall incorporate a threaded grounding cone, a steel or plastic compression ring, and a gland for tightening. Connectors shall have insulated throats.

Expansion and deflection couplings shall be manufactured by O-Z/Gedney, Crouse-Hinds, Appleton or approved equal.

Individual conduit hangers, shall be designed for the purpose, and have pre-assembled closure bolt and nut, and provisions for receiving hanger rod.

Multiple conduit (trapeze) hangers shall be not less than 1-1/2 by 1-1/2 inch, 12 gauge steel, cold formed, lipped channels. Hanger rods shall be not less than 3/8-inch diameter steel.

Solid masonry and concrete anchors shall be a type approved for the purpose.

Provide and assume responsibility for locating and maintaining in proper position all sleeves required for the work.

Openings through floors and walls in which cables, conduits, or pipe pass shall be sealed by U.L. classified smoke and fire stop fittings, and have an hourly rating equal to the fire rating of the floor or wall. Fittings shall be similar to O-Z/Gedney Type "CFS" or "CAFS".

Penetrations through fire-rated floors in which wiring for floor service outlets are routed shall be sealed by U.L. classified smoke and fire-stop fittings, and shall have an hourly rating equal to the floor rating. Fittings shall be similar to O-Z/Gedney Type "FTFS".

Outlet boxes shall be manufactured by Raco, RussellStoll, Steel City, Thomas & Betts or Crouse Hinds.

Outlet boxes for concealed work shall be galvanized steel, 4 in. square or octagon (except as otherwise required by construction, devices or wiring). Provide sufficient depth for application.

Outlet boxes located outdoors and in damp locations shall be weatherproof.

Offset back-to-back outlets shall have minimum 6 in. separation between them. In rated walls, they are to be separated by a stud

Junction, splice and pull boxes shall be made of code gauge sheet steel with removable covers fastened with brass or stainless steel screws, except as noted, and will include insulated supports for cables. Box dimensions shall conform to N.E.C. requirements.

Provide junction, splice and/or pull boxes as noted or as required to facilitate pulling of conductors or in raceway runs that have more than three (3) 90-degree bends.

For indoor applications, boxes shall have a gray enamel finish. For outdoor and damp locations, boxes shall be galvanized.

Wireways shall be as manufactured by Square D, General Electric, or approved equal.

Wireways shall be square, brake-formed of code gauge steel, furnished in standard 10-foot sections with knockouts as required. Wireways shall be of the screw cover type and all necessary offset and elbow fittings. They shall have a gray enamel finish. Size shall be as required for proper cable fill.

Install raceway and installation components as indicated, in accordance with manufacturer's written instructions, applicable requirements of NEC and in accordance with the recognized industry practices, to ensure that products serve intended function.

Raceway supports shall be provided by means of ceiling trapeze, strap hangers, or wall brackets. Use structural steel angles or channels, or manufactured steel support system. Spacing of supports shall be as per NEC and per manufacturer's recommendations but in no case shall exceed 8'-0" on centers. Provide U-bolts at each floor level for riser raceways and anchor to acceptable supports. Secure raceways to supports with pipe straps or U-bolts.

Mechanically join all metal raceways, enclosures and junction boxes to assure continuity.

Branch circuit conduits shall be supported by the building structure.

Conduits located underground beyond the building for branch wiring shall be installed with a minimum of 30 in. top cover as shown on the drawings.

Provide expansion-deflection fittings at expansion joints in accordance with manufacturer's recommendations. Expansion-deflection fittings shall be used for all trade sizes 1-1/4" or larger. For trade sizes up to 1" in size, a suitable length of flexible conduit (or liquid-tight flexible conduit) with sufficient slack for movement and grounding conductor fastened on each side of joint shall be permitted.

Rigid steel conduit shall be used for underground installation; in wet, damp or wash down locations; for exposed runs on the exterior of the building; embedded in concrete or masonry or below concrete that is in contact with earth.

Intermediate metal conduit (IMC) may be used in place of rigid steel in dry locations only.

EMT is to be used for feeders and branch circuits in dry locations such as hung ceilings, interior hollow block walls and furred spaces.

Flexible steel conduit shall be used in dry locations for short connections where rigid conduits or tubing is impracticable, and for final connections to lights and equipment other than motors and transformers.

Liquid-tight flexible steel conduit shall be used in damp locations for final connections to motor terminal boxes, transformers, and other vibrating equipment in damp and dry locations.

In general, cutting and core drilling is to be avoided. Where it becomes necessary, locations are to be coordinated with other trades, the Owner and the structural engineer. There is to be no cutting or core drilling without prior approval.

Provide an outlet box for each lighting fixture and device shown, or required, in the wiring system.

Provide galvanized steel extension rings (depth as required) and raised cover plates in plaster, dry wall, masonry and tile walls.

Mount outlet boxes for similar equipment at uniform height within same or similar areas.

Outlet boxes for fixtures recessed in non-accessible ceilings shall be accessible through the opening created by the removal of the fixture or through access doors provided by this contractor.

All outlet boxes in finished areas for convenience receptacles or local switches shall be 4" square and 1-5/8" deep minimum. Provide with regular deep switch extension cover.

Boxes for use with surface mounted raceways shall be of the same construction and manufacture as the raceway.

Provide junction, splice and pull boxes where required to facilitate installation of wiring, whether or not shown on Drawings. Size boxes according to code, and provide interior partitions, insulated supports, hot dip galvanized angle iron braces, screw-on one-piece or split covers, ground connectors, and other accessories as required.

All outdoor installations shall be weatherproof.

Support all material from the building structure in an approved manner.

Where electrical equipment is mounted in suspended ceiling panels, provide support members to span between runners of ceiling suspension system. Do not support electrical equipment from acoustical panels or other ceiling material; attach to this material for alignment only.

Where electrical outlet boxes, lighting fixtures, and other equipment is installed on tee bars of suspended ceilings, use independent support clips with threaded studs. Do not attach to tee bar except for alignment; use clip similar to Caddy "IDS" that snaps around tee bar and has provisions for independent support wire. Attach a suitable anchor in the structure above ceiling, and suspend a minimum No. 12 support wire to engage the clip.

Do not exceed manufacturer' load rating for mounting devices.

At drywall partitions, provide support members to carry weight of equipment; do not use drywall material to carry any weight.

WIRE AND CABLE

The work includes providing wire and cable complete with all accessories in accordance with Drawings and Specifications and as required for a complete system. Wiring size referenced in this Section shall be AWG, except as noted

This project has been designed for copper conductors. Aluminum conductors are not acceptable and shall not be used. Cable shall be manufactured by Triangle or approved equal by Carol or Guardian Products.

No. 10 and smaller conductors shall be ASTM Standard, solid, copper; and, No. 8 and larger conductors shall be ASTM standard, stranded copper.

Minimum conductor size shall be No. 12 for lighting and power and No. 14 for control and alarm. Increase wire sizes as required for long runs to overcome voltage drop.

Communications and signal wiring shall conform to the recommendations of the manufacturer's communication and signal systems and shall be specified in respective Sections of these Specifications.

"THWN" or "XHHW" insulation shall be used for interior branch circuit and feeder wiring. Rating shall be 90°C in dry locations and 75°C in wet locations.

Green colored insulated wire shall be used for all grounding applications.

Phase wires shall be color-coded as follows:

1. 120/208 volt system: Black for A phase
   Red for B Phase
   Blue for C Phase

Neutral conductors shall be white for 120/208 volts.

Provide O-Z/Gedney Type "CSB" series or approved equal seal fittings between the wire and conduit for all cable and wire entering the building from underground, including service cables.

Not more than 3 current carrying conductors shall be in one (1) conduit unless otherwise indicated. Provide one neutral conductor for each 3 phase 4 wire homerun to a panelboard unless otherwise noted.

MC cable shall comply with the NEC article 330. MC cable shall be as manufactured by AFC or approved equal by Guardian Products.

MC cable shall include a green insulated ground wire of the same size as the other conductors.

Run MC cable in dry hollow metal partitions and above suspended ceilings. Install cable as slack span; do not pull tight. Maintain at least 6" clearance between parallel runs of light and power wiring to avoid inductive coupling. Maintain at least 24" clearance from hot water and steam piping. Provide conduit sleeves through walls and partitions that obstruct horizontal passage of wiring, and seal sleeves after installation of cables. Cable shall be secured by approved staples, hangers or similar fittings independent of ceiling grids or supports.

MC cable shall be used in conjunction with conduit. Cable shall only be permitted for single phase circuits in hollow metal walls and above accessible ceilings. Single phase cable runs shall be gathered into three phase conduit homeruns. In no case shall cable enter directly into panelboards.

Secure MC cable to ceiling structure at intervals not to exceed 6 feet and within 12 inches of every outlet box, junction box, or fitting.

Make wire splices electrically and mechanically secure. Install small wire connectors so that no bare conductor is exposed. Tighten bolts on large conductor connectors so that conductor is deformed, but do not break strands of wire. Use compression tool with proper die for compression connectors in accordance with manufacturer's recommendations, so that conductors are deformed but not broken. Apply insulation over splice so that insulation thickness is at least 1-1/2 times that on conductor. Lap applied insulation at least 1" over conductor insulation so that no bare conductor is exposed.

In general, all feeders No. 8 and larger shall be continuous from point of origin to equipment being served. Splices shall only be used where necessary and with prior written approval of the Engineer.

Terminate conductors on terminal strips in equipment where terminal strips are used. Provide appropriate connectors, or hook conductors around terminal screws as required.

Provide encapsulated splice kits (3-M type 85 series or approved equal) for all splices in areas subject to moisture, including wet locations inside buildings and underground handholes, manholes, and buried junction boxes. Install splice kit in accordance with manufacturer's recommendations, and make splice waterproof. Apply sealing putty to surround each cable. Install mold body so that resin covers each cable sheath by a minimum of one inch.

All copper conductors No. 8 & larger shall be terminated, spliced, and tapped with color-keyed compression connectors, as manufactured by Thomas & Betts Co., Series 54000, Ideal Industries Series 87000, or approved equal. The manufacturer's recommended tooling shall be used. Mechanical type connectors shall not be used.

All copper conductors No. 10 AWG & smaller shall be terminated and spliced with Ideal Industries wing-nut wire connectors or approved equal compression connectors. The flame-retardant thermoplastic insulated type shall be used to isolate the terminal from other metal parts and equipment.t

Use insulating boots supplied for compression connectors or fill joint with "Scotchfill" insulating putty and serve (3) 1/2 lap layers of "Scotch" #33 electrical tape.

WIRING DEVICES AND INSTALLATION COMPONENTS

All local switches near doors shall be located at strike side of door as finally hung, whether so indicated on the Drawings or not.

Height of outlets from finished floor to centerline of outlet shall be as follows:

Bracket Outlets in corridors: *

Receptacle outlets: 1'-6", unless otherwise noted

Wall switch outlet: 3'-8"

Wall switch outlet at borrowed light: 3'-0"

Wall push button: 3'-8"

Motor controllers: 5'-0"

Safety and disconnect switches: 5'-0"

* The top of the wall device is to be even with the top of the door frame (±2"-0) rough-in outlet box accordingly.

Wiring devices and installation components shall be manufactured by Hubbell, Bryant Electric, Pass & Seymour, Levitron, Cooper Industries-Arrow Hart, or General Electric.

Switches shall be heavy-duty specification grade, toggle, quiet type, fully enclosed in composition cases, color as selected by Architect at shop drawing stage. They shall be rated 20 amp, 120/277 volt, AC.

Receptacles shall be the grounding type, composition base, meeting NEMA standards, publication WD-1-1971, color as selected by Owner.

Duplex Convenience Receptacles shall be 20 amps, 125 volts, 2 pole, 3 wire, U ground slot type, Hubbell No. BR20.

Special purpose Single Receptacles shall be 20 amps, 125 volts, 2 pole, 3 wire, twist-lock type, Hubbell No. 2310.

Ground Fault Interrupter Duplex Receptacles: 20 amps, 125 volts, 2 pole, 3 wire, Hubbell No. GF-5352, with weatherproof cover, Hubbell No. 5221.

Where more than one switch or receptacle is being installed, provide multiple gang plates for number of devices as required.

Plates shall be beveled stainless steel satin chrome finish #302, of minimum .035" thickness.

Manual motor starters shall be Allen Bradley Bulletin 600 or approved equal by Square D or General Electric and shall be horsepower rated, and voltage rated for the motor load.

Wallboard and masonry shall fit snuggly to all sides of outlet boxes, grout and patch as required.

Convenience receptacles shall be mounted with ground pole up, except those mounted above counter levels.

Local wall switches and receptacles shall be mounted vertically unless otherwise indicated.

SAFETY AND DISCONNECT SWITCHES

Switches shall be heavy-duty and service rated. They shall be General Electric Type "TH" or equal by Square D, Cutler Hammer, or Siemens. Switches shall include solid neutral where required. Provide auxiliary contacts where required to break motor control circuit power.

Interior enclosures shall be NEMA 1. Enclosures shall have interlocked doors and be capable of being positively padlocked in ON and OFF positions. For exterior installations, the enclosures shall be NEMA 4.

PANELBOARDS

Panel circuit breaker overcurrent protective devices shall be as scheduled on the Drawings and as specified. All breakers shall be bolted-on thermal magnetic type

Panel circuit breakers shall be rated for 10,000 RMS symmetrical amperes minimum interrupting rating at 120/208 volts. Provide higher ratings as required or as scheduled on the Drawings.

Provide handle-locking attachments for all circuit breakers serving emergency lights, exit lights, clocks, and other functions indicated.

Furnish and install a typewritten circuit directory. Hand written will not be accepted.

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BUILDING ENTRANCES
SECURITY ENHANCEMENTS

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550 CHEWS LANDING ROAD
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TITLE: SPECIFICATIONS - ELECTRICAL

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SCHOOL 5

E200

4 OF 4