TOWNSHIP OF FAIRFIELD
CUMBERLAND COUNTY, NEW JERSEY

= CONTRACT DRAWINGS =

SENIOR CENTER
68 FAIRTON GOULDTOWN RD, BRIDGETON, NJ 08302
AMERICAN WITH DISABILITIES ACT (ADA) IMPROVEMENTS

MAY 2024

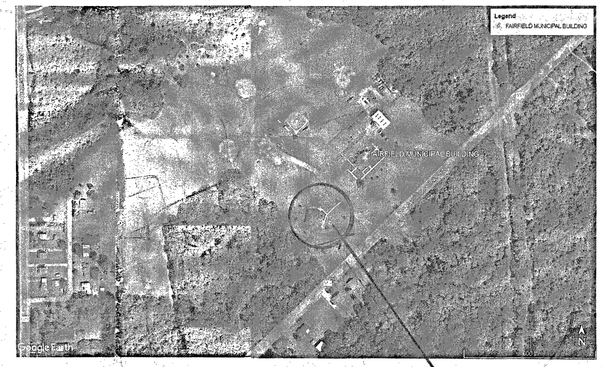
GENERAL NOTES

1. The Scope of Work includes all labor, materials, equipment scaffolding, hoisting, supervision, layout, taxes and appurtenances as required and necessary for a complete and full performance of all work for this project in strict accordance with the contract documents. This exhibit generally defines, but does not limit the Scope of Work.
2. The Contract documents are scope documents which do not necessarily indicate or describe all of the work required for the complete and full performance of the project.
3. The Contractor shall verify the size and dimensions by measurements at the job site, and shall take any and all measurements necessary to verify the intent of the drawings and to perform the work properly. Any discrepancy between the drawings and the measured dimensions of the existing structure shall be brought to the attention of the Architect. No work shall proceed until such discrepancy has been rectified.
4. The contractor alone shall be responsible for the safety of the existing structure during the entire construction of the alterations of the existing structure and shall take adequate precautions to prevent damage to the existing structure in any way. Damage to the existing structure, if occurred, shall be rectified to the satisfaction of the Owner at no extra cost to the Owner.
5. All surfaces adjacent to the work area that are effected by the work shall be patched as required to match existing unless otherwise noted.
6. The Contractor shall maintain the existing corridors and aisles free from obtrusions at all times. Storage of refuse and/or building materials shall not be placed in corridors or aisles.
7. The Contractor shall not detail, order and/or fabricate any material without coordinating the same with the actual field conditions. The Contractor alone is responsible for the proper fitting and connection of the new construction to the existing construction.
8. The Contractor shall submit shop drawings and samples for all finish materials and fabricated items. At the time of submission, the Contractor shall inform the Architect in writing of any deviations in the shop drawings or samples from the requriements of the Contract Documents, unless the Contractor has requested of the Architect, in writing, such deviation at the time of submission and the Architect has given written approval to the specific deviation.
9. The Contractor is responsible for all construction methods procedures, and techniques. By submitting a Proposal, the Contractors agrees and warrants that he has examined the site and the Bid Documents; that he fully understands the existing conditions and nature of the work to be performed; and that the Bid Documents are adequate, and the intended result can be produced under them. No claim for extra payment or damages will be allowed because of alleged impossibilities in accomplishing the required work because of unintentional errors or conflicts in the Bid Documents, or any misinterpretation or misunderstanding.
10. The Contractor shall schedule and coordinate with the Owner, through his authorized representative, all work which may cause interruption to the existing mechanical, electrical systems or building operations. Advanced notice shall also be given to the Owner's representative for any work which will interfere with the fire safety and security system within the buildings.
11. The Contractor shall include cleaning of debris resulting from this work. Debris is to be removed from the site by this Contractor and disposed of at the Contractor's cost. All salvable material and/or items to be removed under the demolition portion of this work shall be returned to the Owner.
12. The Contractor shall ridgidly adhere to all laws, codes and ordinances which apply to this work.
13. The Contractor is responsible for the engineering in regard to contracting its work. All work shall be subject to approval by the Architect and their consultants.
14. The Contractor shall comply with all equal employment opportunity and affirmative action requirements of federal, state and local authorities.
15. The Contractor shall comply with all requirements and regulations of the Occupational Safety and Health Administration (OSHA) of the Department of Labor and shall provide all necessary safety precautions as required for the work.
16. The Contractor is responsible for securing all necessary permits and fees.
17. All finished materials on walls and ceilings in corridors serving as an exit access shall have a flame spread rating of 0 to 25. Finish materials on walls and ceilings in rooms shall have a flame spread rating of 26 to 75. The classification of interior finishes referred to herein correspond to flame spread ratings determined by ASTM E84. Interior finished shall cmply with section 803 interior finish & trim, table 803:4, Section 804, 805 and 807.
18. All wood materials used shall be pressured-treated with fire retardant chemicals in accordance with New Jersey State Building Code and shall meet the flame spread criteria when tested in accordance with ASTM E84 and in accordance with International Building Code 2018 (IBC 2018) fire retardant treated wood.
19. All new carpeting shall meet the fire-resistive requirements of BOCA 1993 including all current supplements and specifically, carpet materials shall comply with the DOC FF-1 "pill test" (DOC 16 CFR, part 1630) "Standard for the Surface Flammibility of Carpets and Rugs" as defined by the US Department of Commerce, National Institute of Standards and Technology.
20. The Contractor shall supervise and direct his work and he shall be solely responsible for all construction means, methods, techniques, sequences, and procedures. As a part of his responsibility the Contractor shall design and supervise construction of any scaffolding for his workmen and shoring of new and existing elements of the construction affected by his work.
21. The Owner will not be responsible for loss of or damage to, any of the contractor's tools, equipment, or material by any cause.
22. Nothing stated in the Contract Documents is intended to conflict with any applicable standard, regulation, or code.
23. When manufacturers of materials or fixtures used on this project provide installation or maintenance directions not covered in the Specifications or detailed on the Drawings, the Contractor furnishing the item shall follow such directions, and shall issue appropriate copies to his Sub-contractors and to other effected contractors.
24. Existing steel fire proofing that is damaged as a result of the new construction shall be patched with materials of type and thickness to match the existing and to maintain the fire resistance integrity of the existing installation.
25. Contractor shall install backing plates and/or structural support at walls and ceilings as required for attachment of all fixtures, equipment, wall mounted light fixtures, chandeliers, canopies, drapery tracks, valences, cabinets and other similiar items.
26. All permits relating to the project shall be secured and paid for by the Contractor.
27. All prime contractors shall coordinate all work with that of mechanical, plumbing, fire protection and electrical contractors. All removals and terminations shall be performed by the respective subcontractors. All work must be done by trades having jurisdiction. All workers must be experienced in their trade.
28. All mechanical work required for new layout shall be done in accordance with code requirements.
29. All plumbing work required for new layout shall be done in accordance with code requirements
30. All Electrical work required for new layout shall be done in accordance with code requirements. All electrical devices and fixtures to be approved type and/or UL approved.
31. All new Fire Protection work to be done in accordance with code requirements. All electrical devices and fixtures to be approved type and/or UL approved.

Township Committee

MARVIN PIERCE JR.	MAYOR
MIKE PETERSON	DEPUTY MAYOR
STEPHAN BATEMAN	COMMITTEEMEN
BENJAMIN BYRD, SR.	COMMITTEEMAN
JULIA BURRUS	COMMITTEEWOMEN

MIKE BURDEN, CPM	TOWNSHIP ADMINISTRATOR
LINDA GONZALES	MUNICIPAL CLERK



LOCATION PLAN
NO SCALE

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NJ. LIC. No. C-6826

No.	DESCRIPTION OF REVISION	DATE	DRAWN	CHECKED
1	REVISED FOR RE-BID REVISED FOR RE-BID	4-26-2024		

TOWNSHIP OF FAIRFIELD
CUMBERLAND COUNTY, NEW JERSEY
FAIRFIELD TOWNSHIP SENIOR CENTER
RENOVATIONS AND ADA IMPROVEMENTS
BLOCK 28, LOT 29.01

COVER SHEET

CME ASSOCIATES
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3141 BORDENTOWN AVENUE, PARLIN, NEW JERSEY 08859 — 1460 ROUTE 9 SOUTH, HOWELL, NEW JERSEY 07731-1194
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SCALE	AS NOTED
DRAWN BY	RRM
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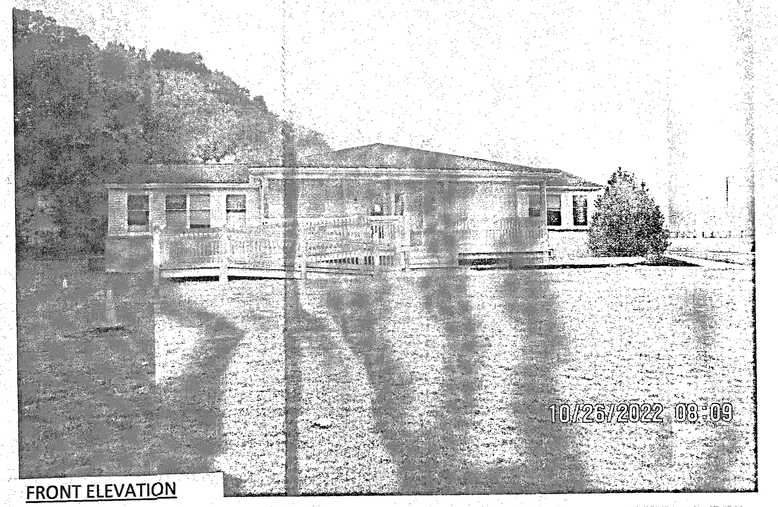
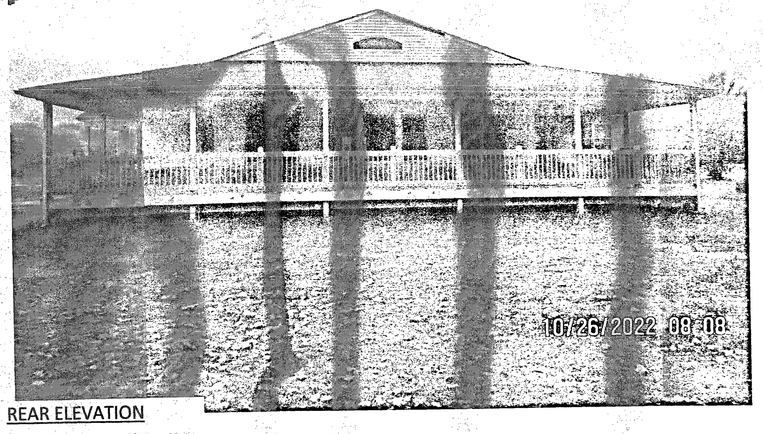
CHECKED BY	JWC
DATE	4-26-2024
SHEET	1

TAX MAP NO. | DRAWING No. A-1 | COVER | FILE No.

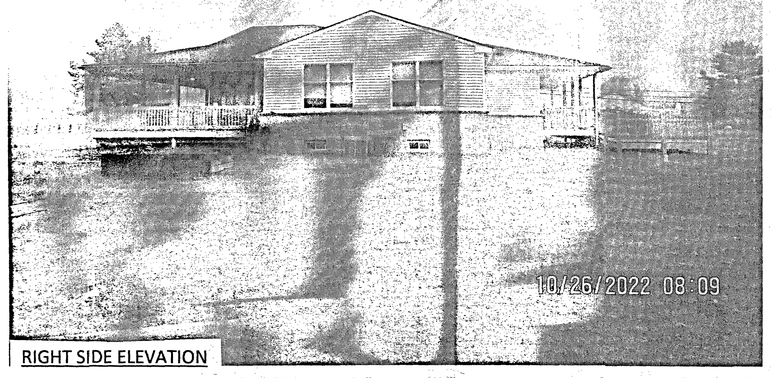


FRONT ELEVATION

LEFT SIDE ELEVATION



REAR ELEVATION



RIGHT SIDE ELEVATION

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TOWNSHIP OF FAIRFIELD
CUMBERLAND COUNTY, NEW JERSEY

FAIRFIELD TOWNSHIP SENIOR CENTER

RENOVATIONS AND ADA IMPROVEMENTS
BLOCK 28, LOT 29.01

EXTERIOR BUILDING PHOTOS

CME ASSOCIATES
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MICHAEL J. McCLELLAND P.E., P.P. NJ PE LIC NO. 32468 NJ PP LIC NO. 3770
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SCALE	DRAWN BY
AS NOTED	RRM
DESIGNED BY	CHECKED BY
JWC	JWC
DATE	SHEET
4-26-2024	)

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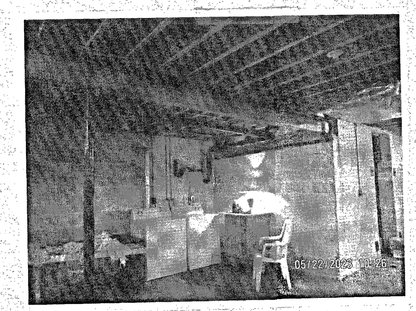

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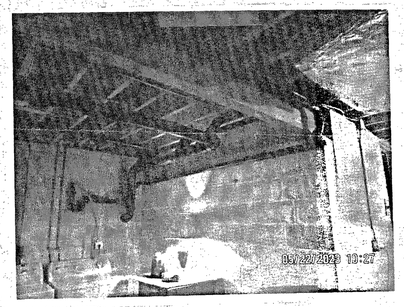

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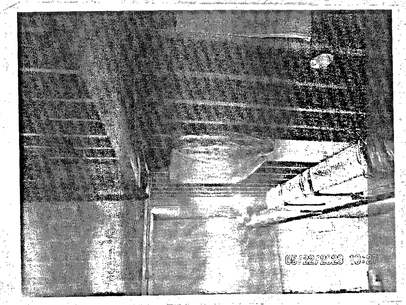

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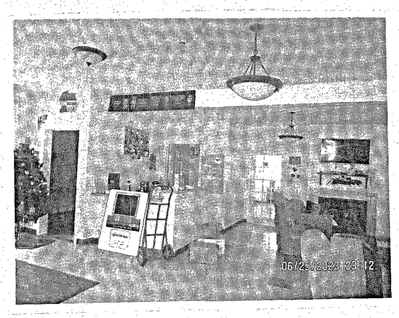

UPPER LEVEL

4

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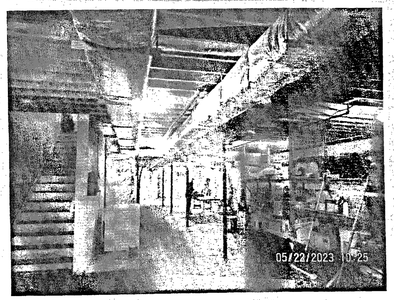

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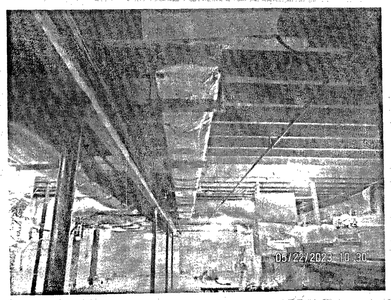

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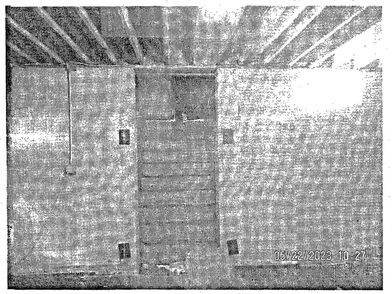

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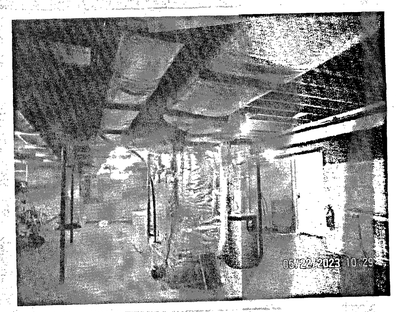

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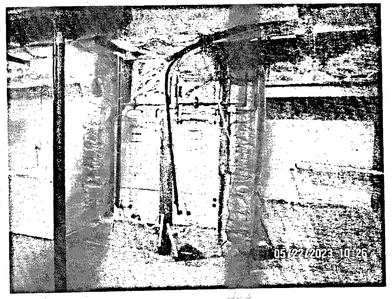

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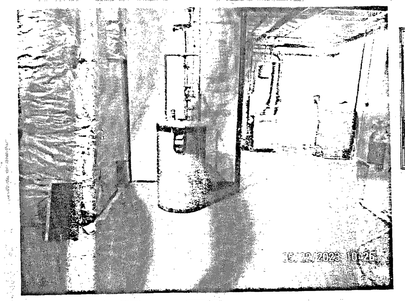

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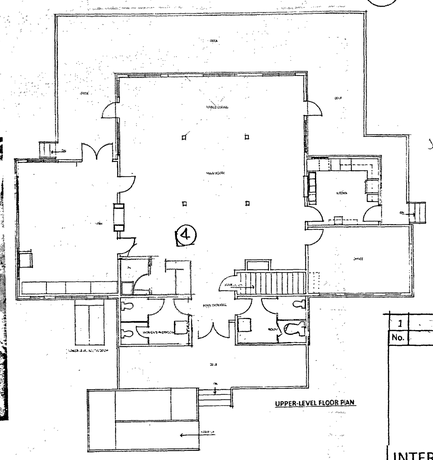
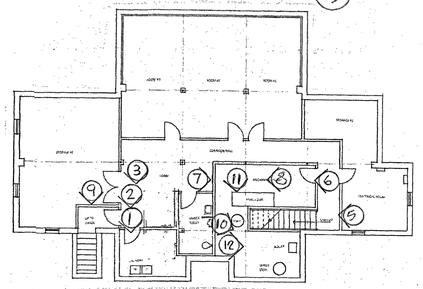


UPPER-LEVEL FLOOR PLAN

8



LOWER-LEVEL FLOOR PLAN

9

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1	REVISED FOR RE-BID	4-26-2024		

TOWNSHIP OF FAIRFIELD
CUMBERLAND COUNTY, NEW JERSEY

FAIRFIELD TOWNSHIP SENIOR CENTER

RENOVATIONS AND ADA IMPROVEMENTS
BLOCK 28, LOT 29.01

INTERIOR BUILDING PHOTOS

CME ASSOCIATES
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3141 BORDENTOWN AVENUE, PARLIN, NEW JERSEY 08859 —— 1460 ROUTE 9 SOUTH, HOWELL, NEW JERSEY 07731–1184
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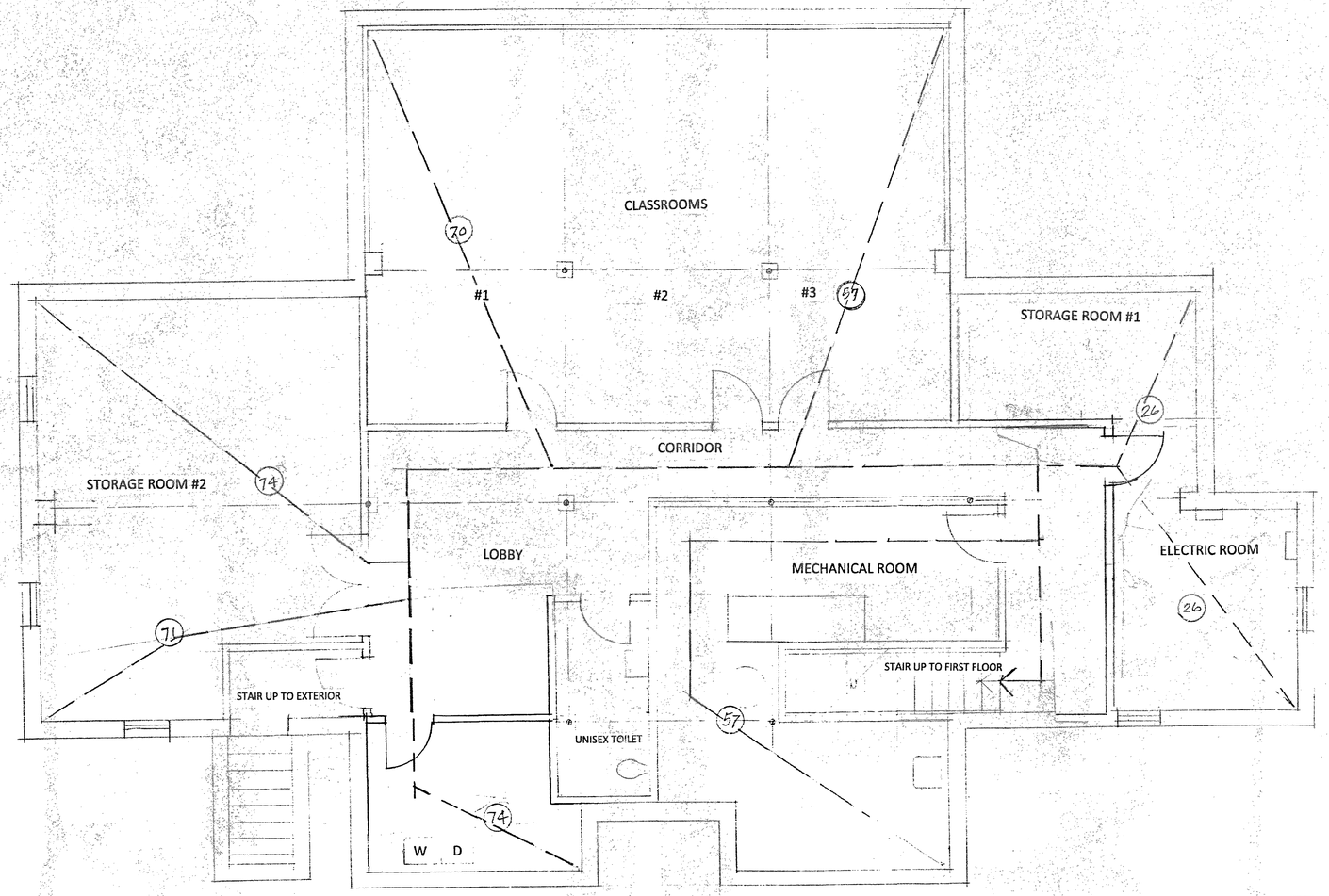
AS NOTED	RRM
DESIGNED BY	CHECKED BY
JWC	JWC
DATE	SHEET
4-26-2024	

DRAWING No.: A-3
FILE No.:



OCCUPANCY & TRAVEL DISTANCE

SPACE	SQ.FT.	SQ./ PERSON	OCCUPANCY	TRAVEL DISTANCE
CLASSROOMS	828	20	41	70, 57
STORAGE #1	150	300	1	26
STORAGE #2	430	300	2	71, 74
LAUNDRY	90	300	1	74
ELECTRIC RM	162	300	1	26
MECHANICAL RM	302	300	1	57
		TOTAL OCCUPANCY	47	

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TOWNSHIP OF FAIRFIELD
CUMBERLAND COUNTY, NEW JERSEY

FAIRFIELD TOWNSHIP SENIOR CENTER

RENOVATIONS AND ADA IMPROVEMENTS
BLOCK 28, LOT 29.01

CODE COMPLIANCE PLAN

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SCALE	DRAWN BY
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DRAWING No.: A-4
FILE No.:

DECK

DECK

DECK

DN

EXIST. RAISED CLG.

MAIN ROOM
9'-2" CLG. HT.

NEW BUFFET CABINET 2'X7'X3'H.

EXIST PASS THRU

EXIST. 3 COMP SINKS

KITCHEN

DW

REF

GREASE TRAP

EXIST. COL.

EXIST DROP BEAM

EXIST HAND SINK

DN

PANTRY

EXIST. FIRE EXTG.

NEW LOW (42") PARTITION

PLATFORM LIFT PARKED

OFFICE

REF

RELOCATE EXIST. FREEZERS FROM LOWER LEVEL & UPPER LEVEL

FR 28"x56"

FR 28"x42"

FR 28"x40"

FR 28"x60"

JAN CLO.

DESK

REMOVE DOOR & INCREASE OPNG TO ±48"W. x ±78"H

ENTRY LOBBY

WOMEN'S TOILET

MEN'S TOILET

EXIST. BILCO DOOR + STAIR UP FROM LOWER LEVEL

DECK

DN

EXIST. RAMP UP

EXISTING UPPER LEVEL FLOOR PLAN

1/4"=1'-0"

7'-0"

PLAN TOP

3'-0"

BUFFET CABINET 3/8"=1'-0"

INTERIOR DIMENSION

3 1/2"

3 3/8"

5/8"

12"

BASEMENT DIMENSION

3/4"

4"

3 3/8"

5"

BASEMENT WINDOW

TYPICAL EXTERIOR WALL CONSTRUCTION (FOR INFORMATION ONLY)

1/2"=1'-0"

PARTITION KEYS

EXIST. PARTITION TO REMAIN

NEW METAL STUD/GYP. BD. PARTITION

EXIST. PARTITION TO BE REMOVED

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TOWNSHIP OF FAIRFIELD
CUMBERLAND COUNTY, NEW JERSEY

FAIRFIELD TOWNSHIP SENIOR CENTER

RENOVATIONS AND ADA IMPROVEMENTS

BLOCK 28, LOT 29.01

EXISTING UPPER FLOOR PLAN

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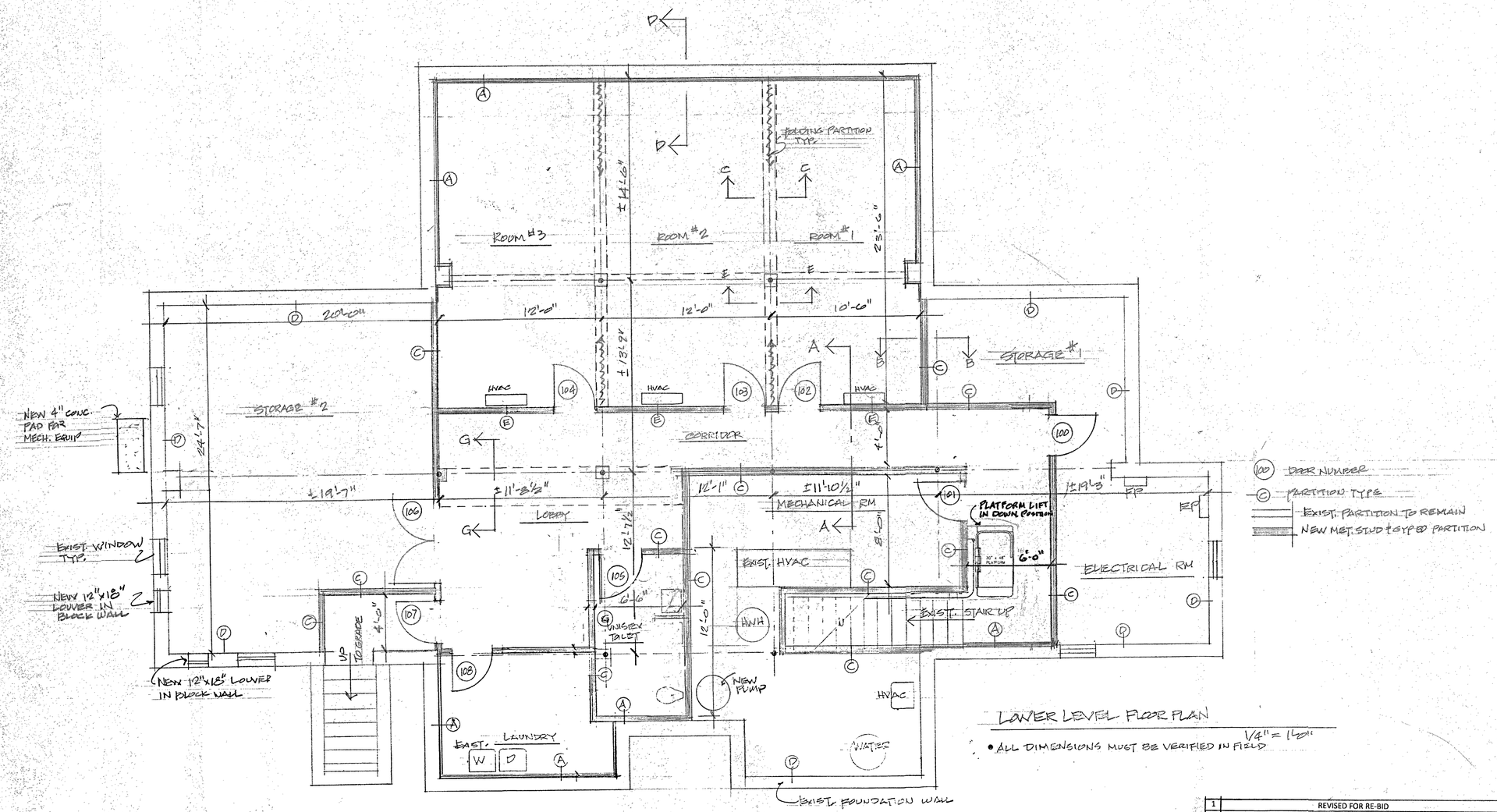
DAVID J. SAMUEL P.E., P.P. NJ PE LIC NO. 25835 NJ PP LIC NO. 2405
JOHN J. STEFANI P.E., L.S. & P.P. NJ PE LS LIC NO. 24271 NJ PP LIC NO. 2089
JAY B. CORNELL P.E., P.P. NJ PE LIC NO. 32952 NJ PP LIC NO. 3674
MICHAEL J. McCLELLAND P.E., P.P. NJ PE LIC NO. 32468 NJ PP LIC NO. 3770
GREGORY R. VALESI P.E., P.P. NJ PE LIC NO. 34458 NJ PP LIC NO. 4361

GREGORY R. VALESI P.E., P.P.
NEW JERSEY PROFESSIONAL ENGINEER N.J. LIC. 34458

SCALE: AS NOTED | DRAWN BY: RRM | DESIGNED BY: JWC | CHECKED BY: JWC | DATE: 4-26-2024 | SHEET: 1

DRAWING No.: A-5

FILE No.:



LOWER LEVEL FLOOR PLAN

1/4" = 1'-0"

• ALL DIMENSIONS MUST BE VERIFIED IN FIELD

No.	DESCRIPTION OF REVISION	DATE	DRAWN	CHECKED
1	REVISED FOR RE-BID	4-26-2024		

TOWNSHIP OF FAIRFIELD
CUMBERLAND COUNTY, NEW JERSEY

FAIRFIELD TOWNSHIP SENIOR CENTER

RENOVATIONS AND ADA IMPROVEMENTS

BLOCK 28, LOT 29.01

EXISTING/PROPOSED LOWER FLOOR PLAN

CME ASSOCIATES
CONSULTING AND MUNICIPAL ENGINEERS
3141 BORDENTOWN AVENUE, PARLIN, NEW JERSEY 08859 — 1460 ROUTE 9 SOUTH, HOWELL, NEW JERSEY 07731-1194
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JOHN H. ALLGAIR P.E., P.P. (1963 – 2001)	DAVID J. SAMUEL P.E., P.P. NJ PE LIC NO. 25638 NJ PP LIC NO. 2455	JOHN J. STEFANI P.E., L.S. & P.P. NJ PE LS LIC NO. 24271 NJ PP LIC NO. 2089
JAY B. CORNELL P.E., P.P. NJ PE LIC NO. 32962 NJ PP LIC NO. 3874	MICHAEL J. McCLELLAND P.E., P.P. NJ PE LIC NO. 32466 NJ PP LIC NO. 3770	GREGORY R. VALESI P.E., P.P. NJ PE LIC NO. 34458 NJ PP LIC NO. 4361

GREGORY R. VALESI P.E., P.P.
NEW JERSEY PROFESSIONAL ENGINEER N.J. LIC. 34458

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AS NOTED	RRM
DESIGNED BY JWC	CHECKED BY JWC
DATE 4-26-2024	SHEET

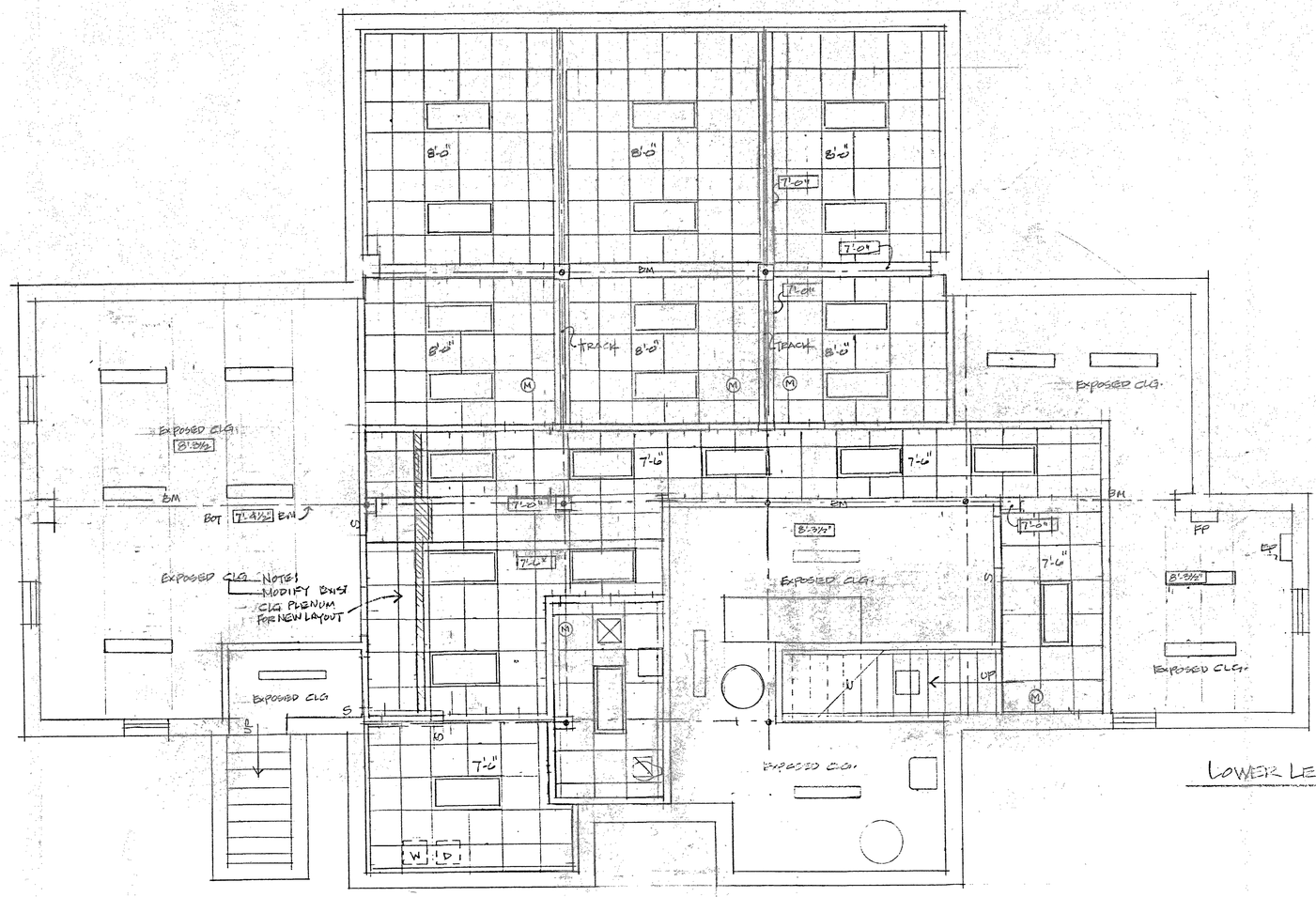
TAB NAME: DRAWING No.: A-6

FILE No.:

JAMES W. CASCARDI R.A.
ARCHITECT
849 West Bay Ave. Suite 16
Barnegat, New Jersey 08005
732 410 2650

James W Cascardi
NJ LIC NO. C-6826

SCAN
6



NEW 2'x4' LED FIXTURE W/ MOTION CONTROL @ CLG.

NEW 2'x2' LED FIXTURE W/ MOTION CONTROL @ CLG.

(M) MOTION CONTROL LIGHT SWITCH

NEW LED FIXTURE

S LIGHT SWITCH

NEW ACOUSTIC TILE 2'x2' W/ 15/16" GRID WHITE

8'-0" CEILING HEIGHT UNLESS OTHERWISE NOTED

LOWER LEVEL REFLECTED CEILING PLAN

1/4"=1'-0"

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TOWNSHIP OF FAIRFIELD
CUMBERLAND COUNTY, NEW JERSEY

FAIRFIELD TOWNSHIP SENIOR CENTER

RENOVATIONS AND ADA IMPROVEMENTS
BLOCK 28, LOT 29.01

LOWER REFLECTED CEILING PLAN

JAMES W. CASCARDI R.A.
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732 410 2650

NJ LIC NO. C-6826

CME ASSOCIATES
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JOHN H. ALLGAIR P.E., P.P. (1983 – 2001)
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JOHN J. STEFANI P.E., L.S. & P.P. NJ PE LIC NO. 24271 NJ PP LIC NO. 2098
JAY B. CORNELL P.E., P.P. NJ PE LIC NO. 33962 NJ PP LIC NO. 3874
MICHAEL J. McCLELLAND P.E., P.P. NJ PE LIC NO. 32456 NJ PP LIC NO. 3770
GREGORY R. VALESI P.E., P.P. NJ PE LIC NO. 34458 NJ PP LIC NO. 4301
GREGORY R. VALESI P.E., P.P.
NEW JERSEY PROFESSIONAL ENGINEER N.J. LIC. 34458

SCALE	DRAWN BY
AS NOTED	RRM
DESIGNED BY JWC	CHECKED BY JWC
DATE 4-26-2024	SHEET

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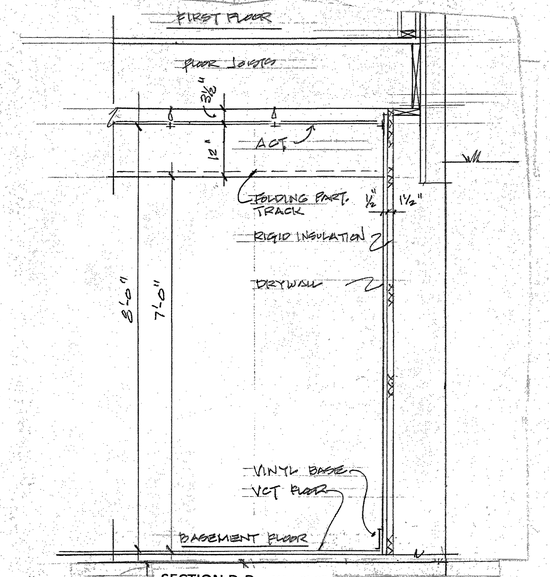
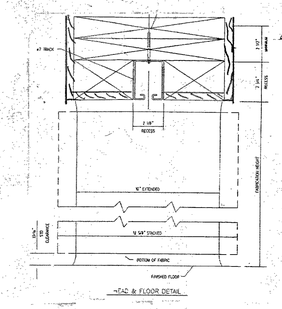
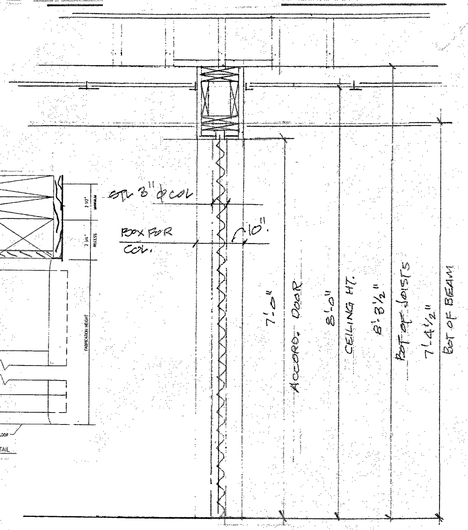


SECTION D-D ¼" = 1'-0"



FP-1



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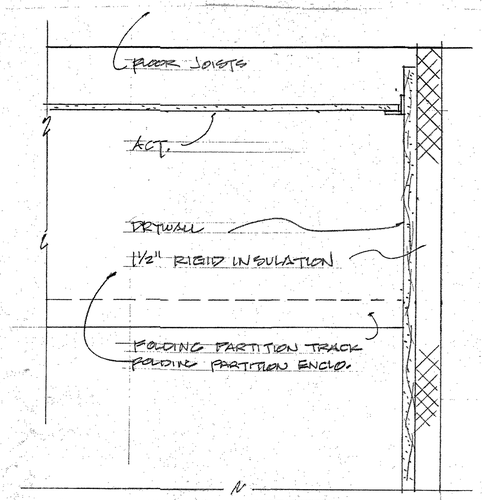

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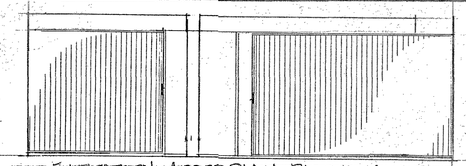
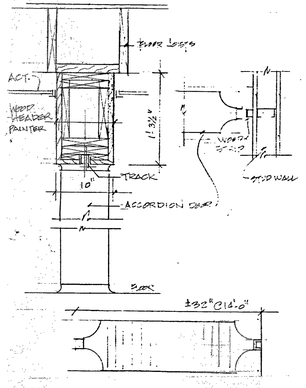
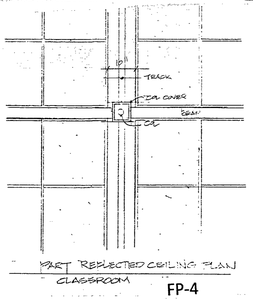


ELEVATION ACCORDIAN PARTITION

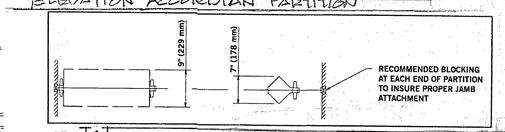


FP-2



PART REFLECTED CEILING PLAN CLASSROOM

FP-4



FP-3

No.	DESCRIPTION OF REVISION	DATE	DRAWN	CHECKED
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TOWNSHIP OF FAIRFIELD
CUMBERLAND COUNTY, NEW JERSEY

FAIRFIELD TOWNSHIP SENIOR CENTER

RENOVATIONS AND ADA IMPROVEMENTS
BLOCK 28, LOT 29.01

INTERIOR SECTIONS

JAMES W. CASCARDI R.A.
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Barnegat, New Jersey 08005
732 410 2650

James W. Cascardi
NJ LIC NO. C-6826

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GREGORY R. VALESI P.E., P.P.
NEW JERSEY PROFESSIONAL ENGINEER N.J. LIC. 34458

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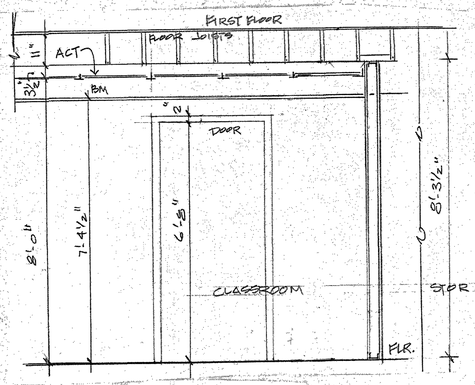
AS NOTED	RRM
DESIGNED BY	CHECKED BY
JWC	JWC
DATE	SHEET
4-26-2024	

TAB NAME: 1
DRAWING No.: A-8
FILE No.:



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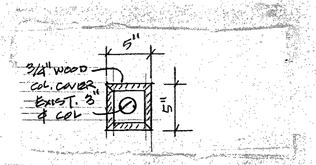
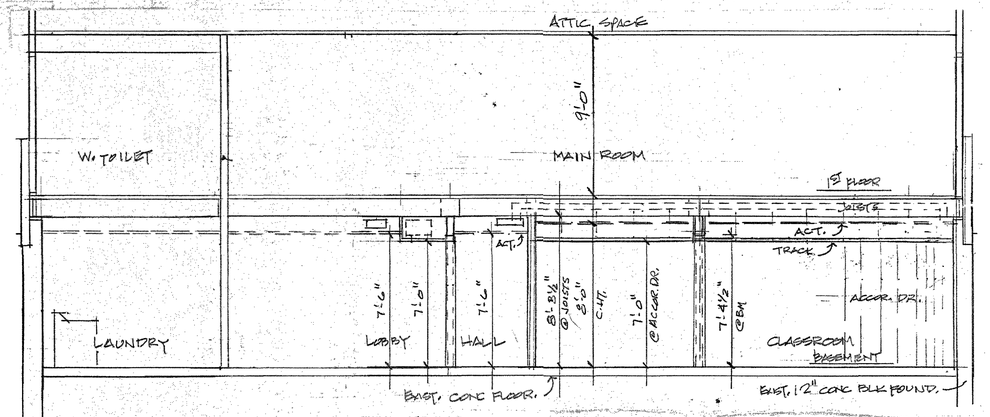
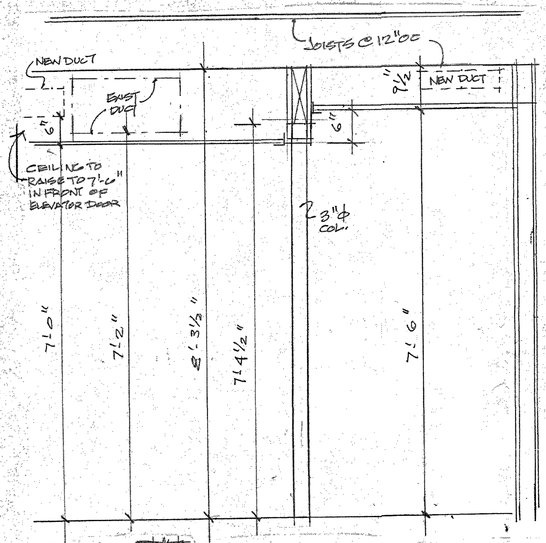


DETAIL at STEEL COLUMN COVER



BUILDING SECTION - G-G ¼" = 1'-0"



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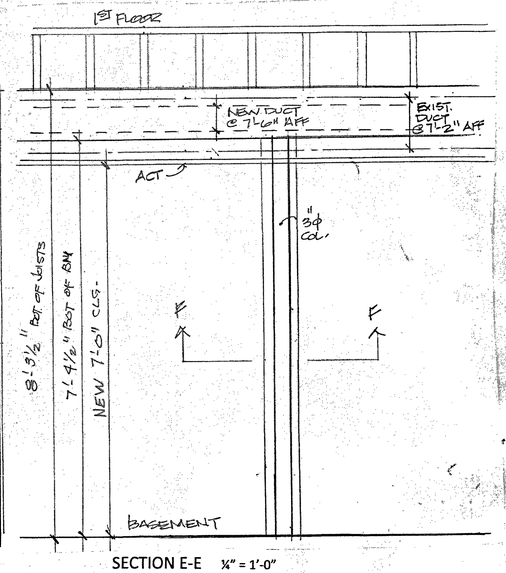

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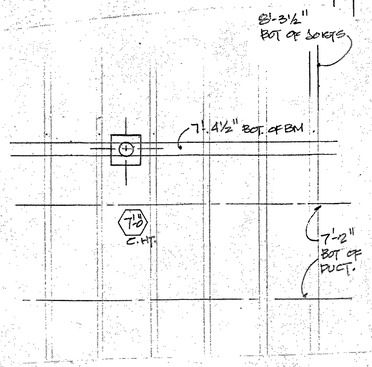

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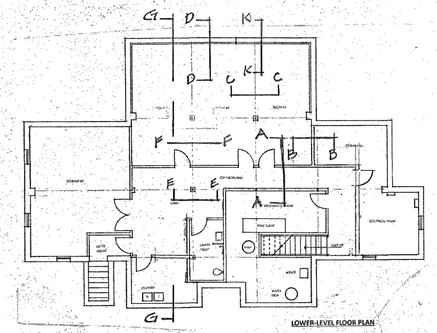
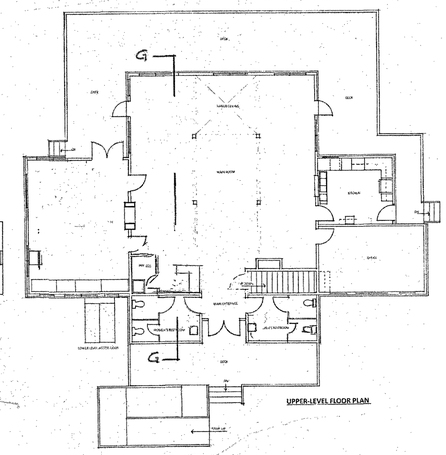
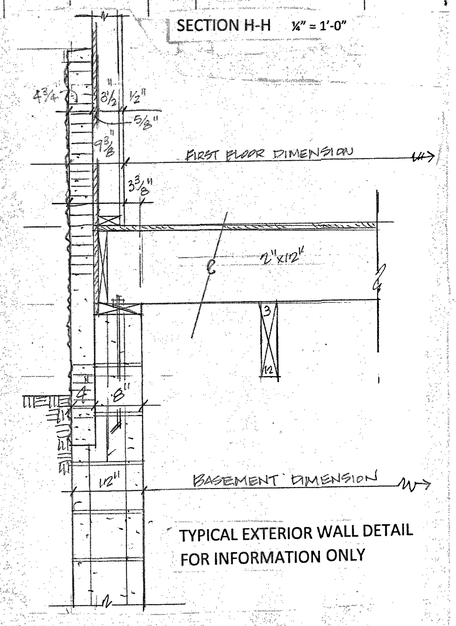
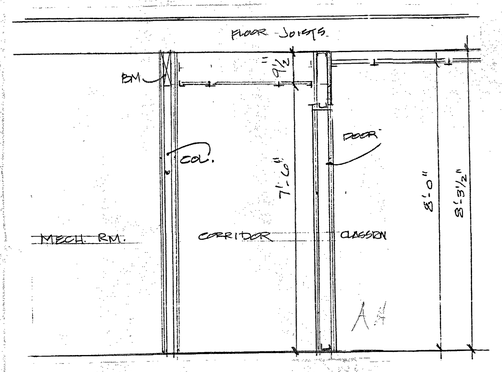




KEY PLAN LOWER LEVEL UPPER LEVEL



TYPICAL EXTERIOR WALL DETAIL
FOR INFORMATION ONLY



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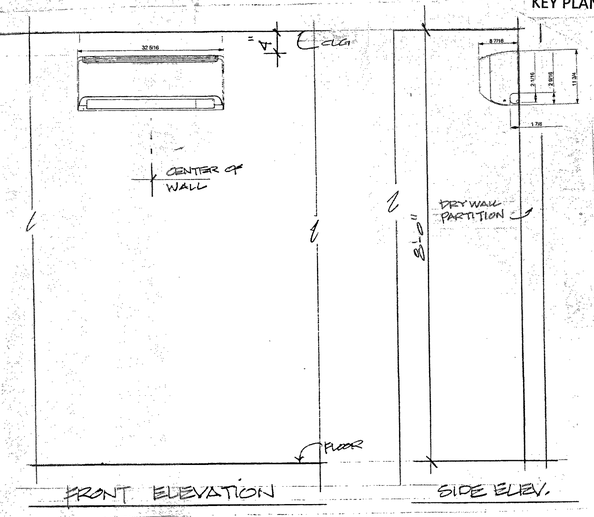

DETAIL OF WALL MOUNTED HVAC UNIT

JAMES W. CASCARDI R.A.
ARCHITECT
849 West Bay Ave. Suite 16
Barnegat, New Jersey 08005
732 410 2650

NJ LIC NO. C-6826

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TOWNSHIP OF FAIRFIELD
CUMBERLAND COUNTY, NEW JERSEY

FAIRFIELD TOWNSHIP SENIOR CENTER

RENOVATIONS AND ADA IMPROVEMENTS
BLOCK 28, LOT 29.01

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JOHN J. STEFANI P.E., L.S. & P.P. NJ PE LS LIC NO. 24371 NJ PP LIC NO. 2082
JAY B. CORNELL P.E., P.P. NJ PE LIC NO. 33952 NJ PP LIC NO. 3874
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NEW JERSEY PROFESSIONAL ENGINEER N.J. LIC. 34458

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FILE NO. | DRAWING NO. A-9

BUILDER SERIES SPECIFICATIONS

Sign Face: Constructed of Ultramatte Acrylic which is capable of meeting all ASTM specifications as to physical, optical, mechanical, thermal, electrical and flammability properties. Sign face is 1/16" or 1/8" thick with a matte finish. Available in 25 standard colors and an unlimited choice of custom colors.

Pigment System: Acrylic sign face is subsurface printed with a compatible pigment system utilizing formulas tested and proved to have bonding reaction with the Acrylic surface. Colors may be achieved by choosing a standard acrylic opaque sheet, which can be custom colored to meet your design needs.

Construction: An Acrylic plate is cut to the required size. A sheet of 1/32" Applique, coated with a factory applied 3M adhesive, is put onto the front of the sign face. All text, numerals and symbols are then computer engraved out of the Applique material. The computer then drills .03" holes into the sign face, and optically correct acrylic raster balls are fused .015" into the sign face.

Mounting: Sign mounts to the surface with permanent double faced high bond vinyl foam tape and silicone adhesive or by using screws appropriate for the surface being mounted to.

MEETS ALL ADA SPECIFICATIONS

All content and style complies with ADAAG (4.30.1-7) Americans with Disabilities Act Accessibility Guidelines for Building and Facilities.

Tactile Letters and Numerals: Tactile letters and numbers are a minimum of 5/8" high, a maximum of 2" high, and are raised a minimum of 1/32" from the sign surface.

Braille: Grade 2 Braille is to be clear, with no interruption of the smooth, clean surface of the sign.

Pictogram: Where desired, pictograms are to be placed within an area which is 6" in height in which no other information will be displayed.

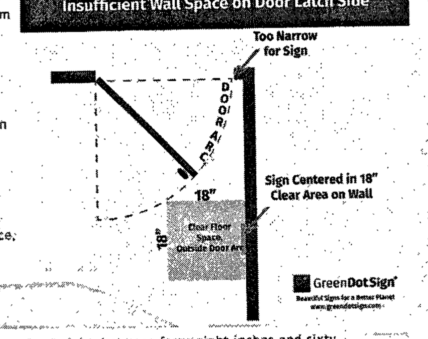
Contrast: The background of the sign must be matte or non-glare in appearance. The contrast between the background color and text color shall be a minimum of 70 to 1, and the gloss of the materials used shall be within 11 to 19 degrees on a 60 degree meter.

1. **Side** - When a tactile sign is at a door, the sign shall be located alongside the door at the latch side.

2. **Space** - Signs containing tactile characters shall be centered on a clear floor space of eighteen inches minimum by eighteen inches adjacent to the doorway. The clear space must extend beyond the arc of any door swing between the closed position and 45-degree open position. Signage tactile characters are centered in the eighteen inch space when installed.

3. **Height** - Tactile characters on signs shall be located forty-eight inches minimum to sixty inches maximum above the floor finish or ground surface, as measured from the baseline of the lowest tactile character.

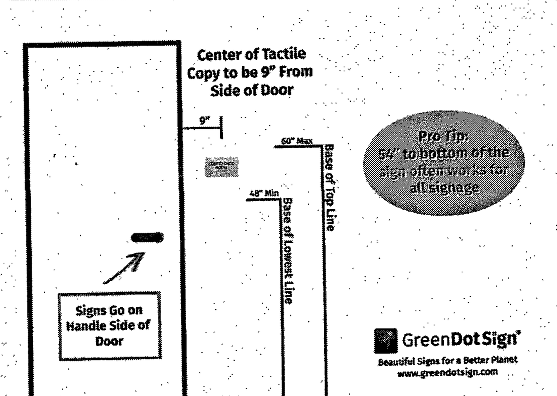
ADA Sign Location Requirement with Insufficient Wall Space on Door Latch Side



The twelve inch range of allowable hanging height, between forty-eight inches and sixty inches, accommodates signs of varied sizes to be consistently hung on the same visual line along a wall. Signs for child-oriented rooms, such as restrooms in elementary schools, are often hung at the lowest allowable height. The graphic below illustrates the most common ADA sign mounting position.

Where to Hang an ADA Sign

Tactile Signs are Required for Every Permanent Room or Space



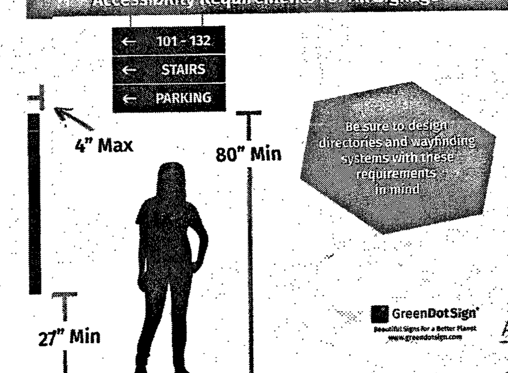
1. When hanging a sign from the ceiling, the sign bottom must be at least eighty inches above the floor.

2. Signs projecting from the wall must be at least twenty-seven inches above the floor and protrude a maximum of four inches.

3. Signs must not block doors or emergency equipment.

General Signage Hanging Requirements

Accessibility Requirements For All Signage



208

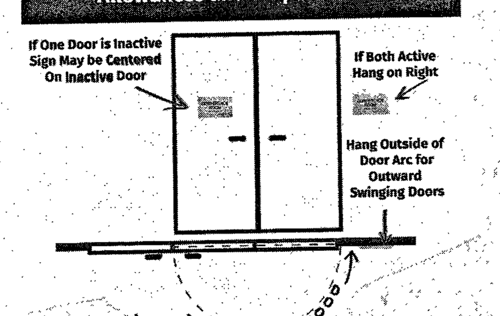
1. Where there is no wall space at the latch side of a single door or at the right side of double doors, mount sign on nearest adjacent wall (see diagram on page 31).

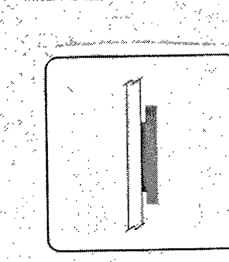
2. On double doors with only one active door, mount sign on the inactive door.

3. On double doors that are both active, mount sign on the right side of the right door.

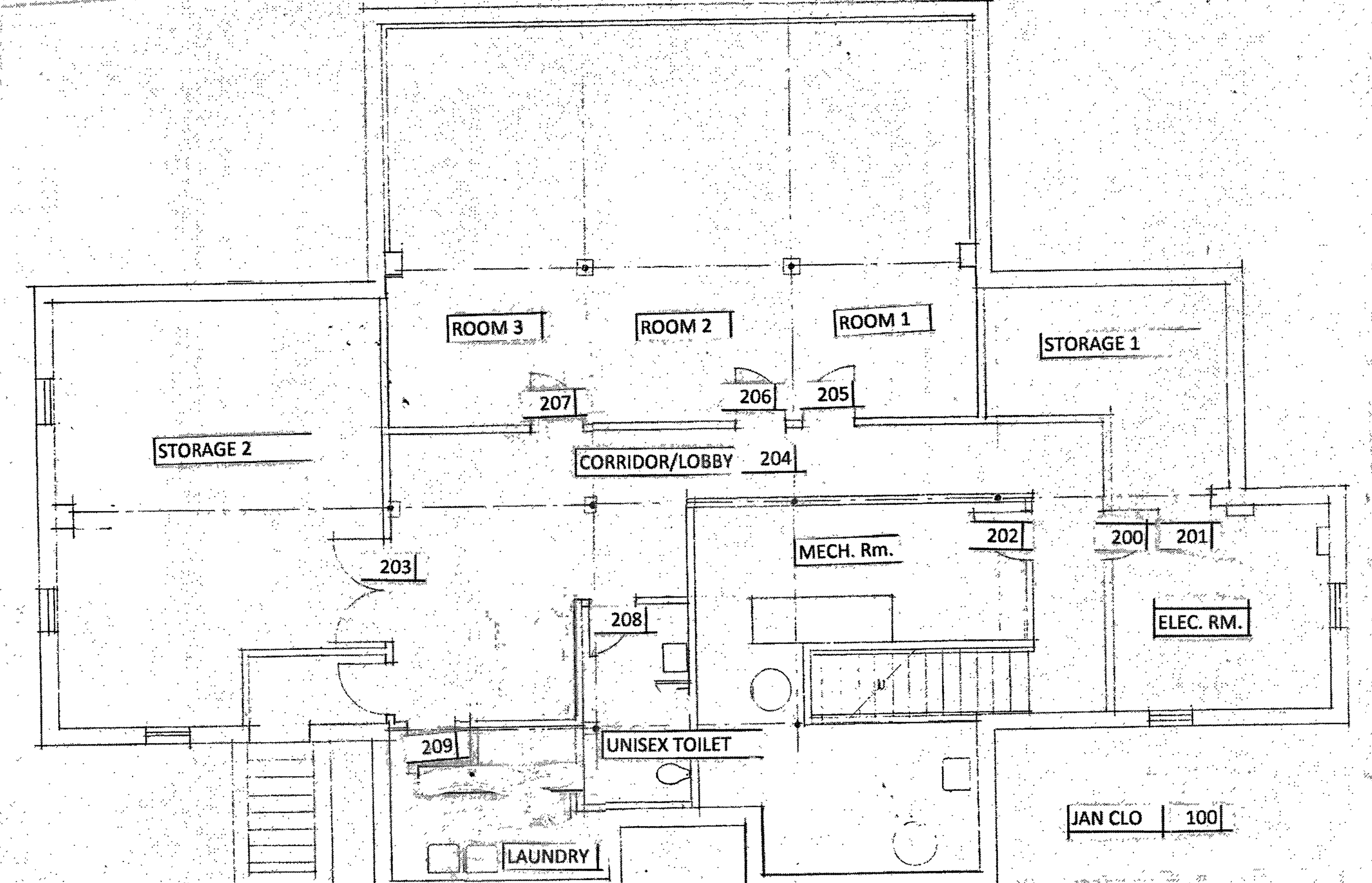
4. On outward swinging doors, mount sign outside fully opened door arc.

Double Door ADA Sign Allowances and Requirements





Double Faced Foam Tape
1/16" pressure sensitive foam tape. Best used in conjunction with silicone adhesive.



INTERIOR ROOM ADA SIGN SCHEDULE

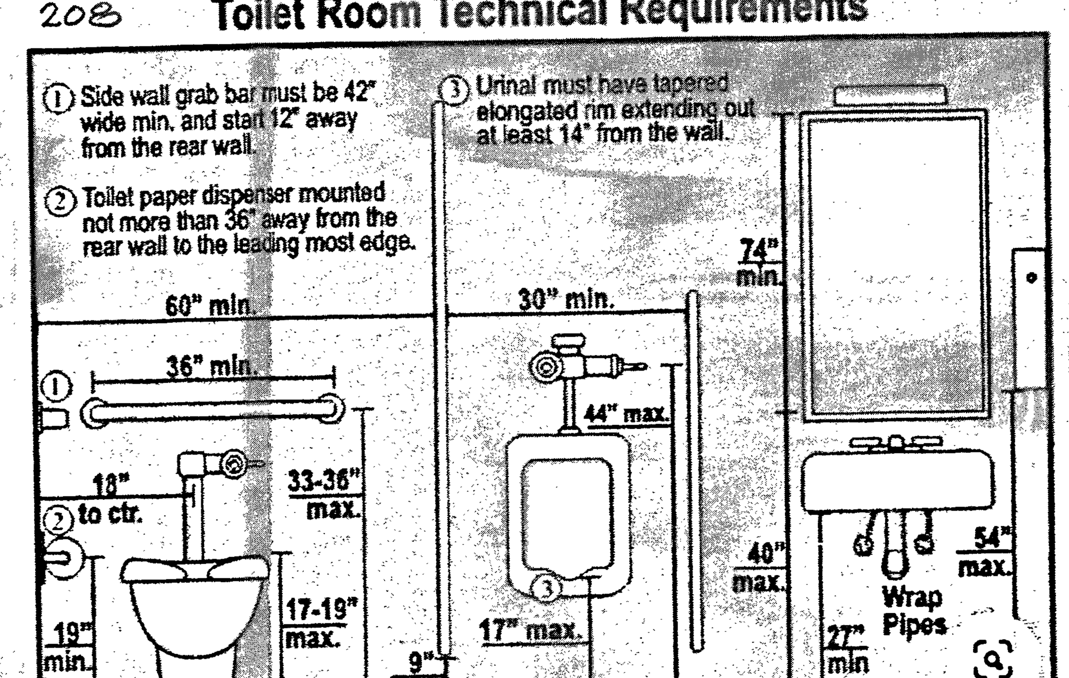
ROOM NAME	ROOM NUMBER		REMARKS
LOWER LEVEL		non number sign	
ELEC. RM.	200	STAIRS UP	spell out all words on signs
STORAGE 1	201	STAIR UP TO GRADE	
MECH. ROOM	202		background to be blue with white letters
STORAGE 2	203		
CORRIDOR/LOBBY	204	PLATFORM LIFT	
ROOM 1	205		
ROOM 2	206		
ROOM 3	207		
UNISEX TOILET	208		ADA GRAPHIC
LAUNDRY	209		
UPPER LEVEL			
JAN CLO	100		
MEN T.	101		ADA GRAPHIC
WOMEN T	102		ADA GRAPHIC
PANTRY	103		
KITCHEN	104		
STAIRS DN	105	PLATFORM LIFT	
OFFICE	106		

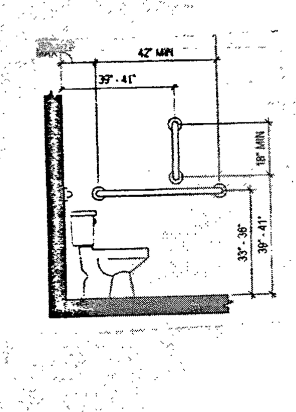
ADA COMPLIANT SIGNS

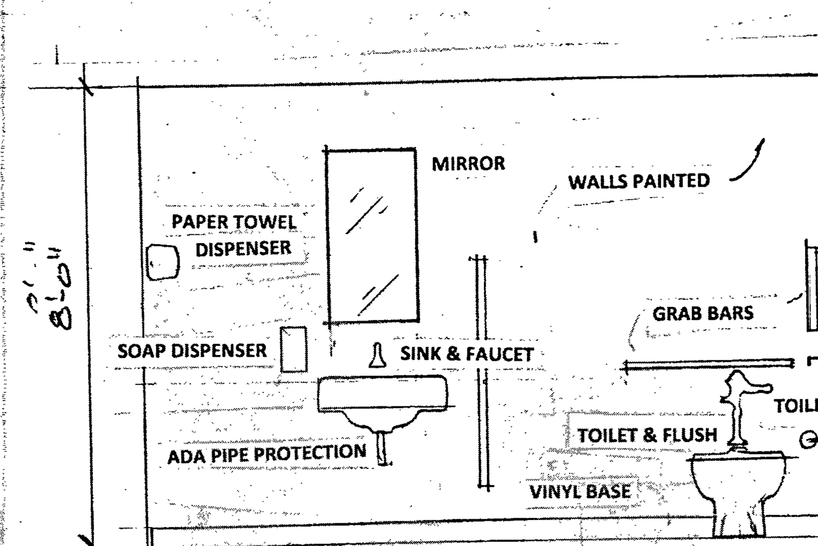
GREEN DOT SIGN CO.

FOLLOW ADA REQUIREMENTS FOR SIGNAGE. SIGNS SHALL BE SECURED TO WALLS/DOORS ETC. USING ADHESIVE BY MANUFACTURER AND SILICONE. MOUNT SIGN IN ACCORDANCE WITH ADA REQUIREMENTS IF THERE IS A CONFLICT NOTIFY THE ARCHITECT FOR DIRECTION. PREFERRED SIGN LOCATION IS ON A WALL ADJACENT TO DOOR LATCH.

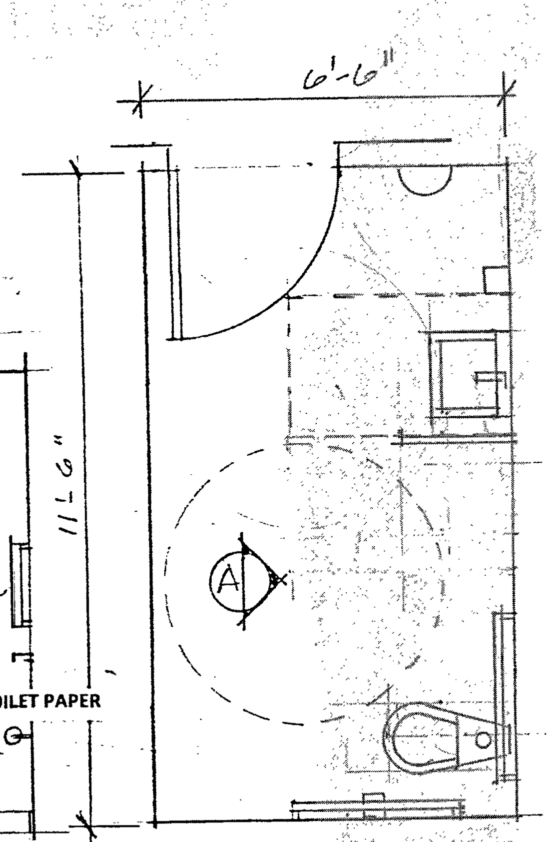
Toilet Room Technical Requirements







ELEVATION A 3/8"= 1'-0"

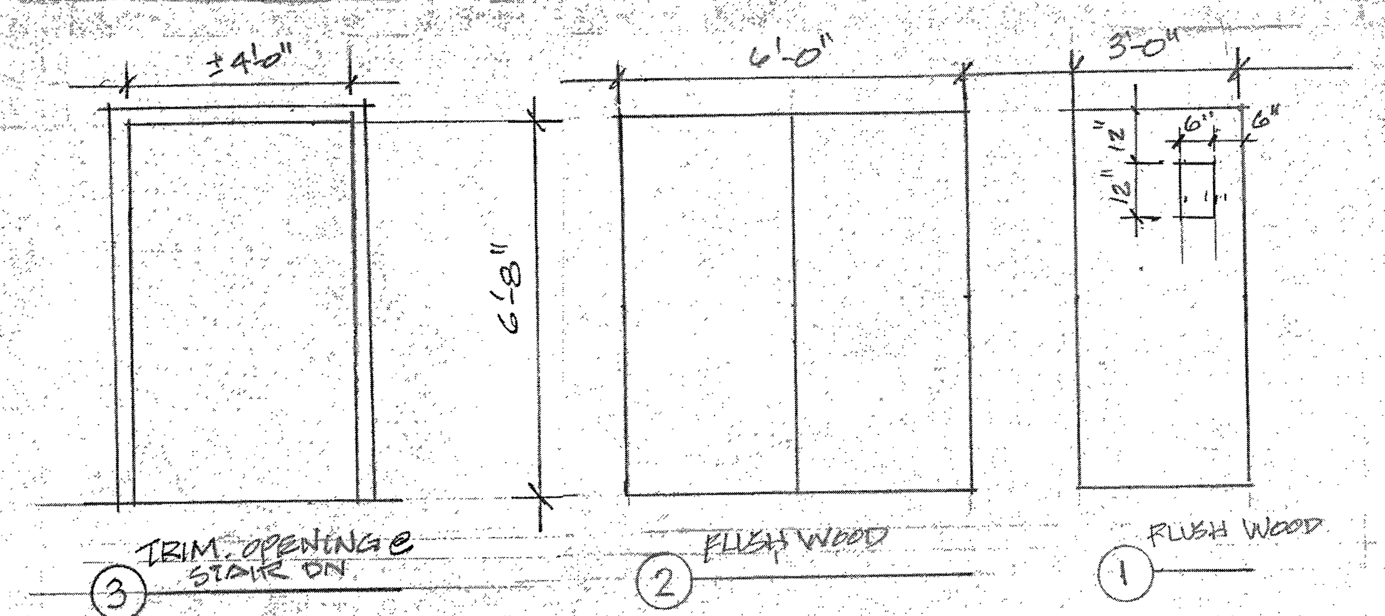


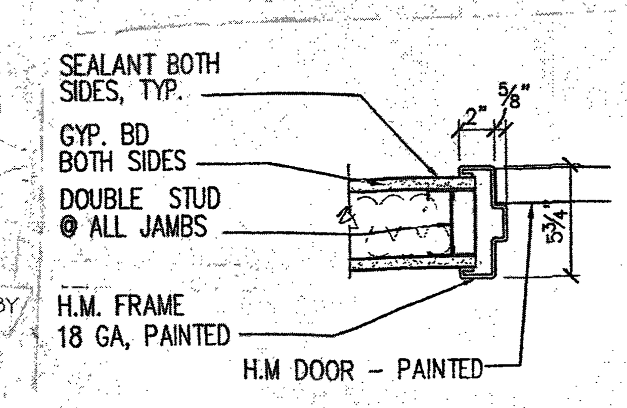
PLAN 3/8" = 1'-0"

TOILET ROOM

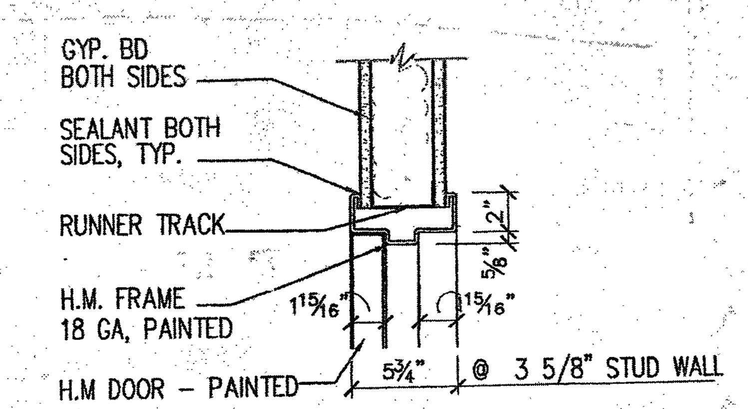
DOOR AND HARDWARE SCHEDULE

DR NO.	LOCATION	DR TYPE	MAT'L	DOOR SIZE WIDTH	DOOR SIZE HEIGHT	THICK	FRAME DETAILS FRM MAT.	FRAME DETAILS HEAD	JAMB	HRDW.	REMARKS
100	stor #1	flush	met	3'-0"	6'-8"	1 3/4"	hm	1	2	4	20 min
101	mech. Rm.	flush	met	3'-0"	6'-8"	1 3/4"	hm	1	2	4	20 min
102	room #1	flush	wood	3'-0"	6'-8"	1 3/4"	hm	3	4	2	20 min
103	room #2	flush	wood	3'-0"	6'-8"	1 3/4"	hm	3	4	2	20 min
104	room #3	flush	wood	3'-0"	6'-8"	1 3/4"	hm	3	4	2	20 min
105	toilet	flush	wood	3'-0"	6'-8"	1 3/4"	hm	1	2	3	20 min
106	stor. # 2	flush	met	6'-0"	6'-8"	1 3/4"	hm	1	4	4	20 min
107	stair up	flush	met	3'-0"	6'-8"	1 3/4"	hm	1	4	2	20 min
108	laundry	flush	met	3'-0"	6'-8"	1 3/4"	hm	1	4	2	20 min

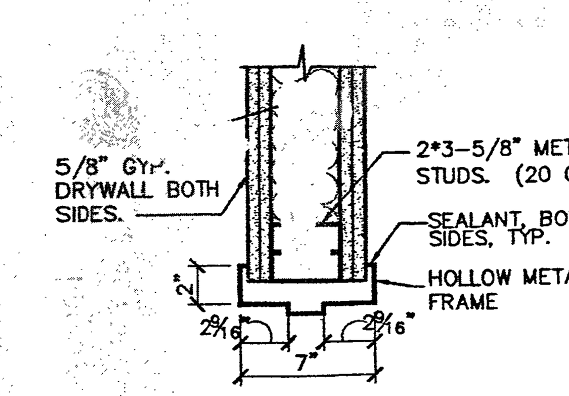




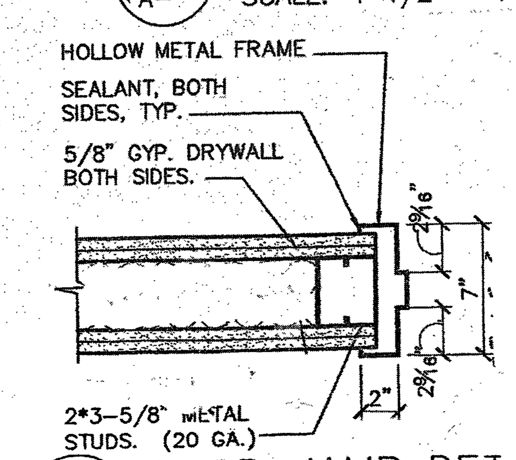
1 A-. DOOR JAMB DET.
SCALE: 1-1/2" = 1'-0"



2 A-. DOOR HEAD DET.
SCALE: 1-1/2" = 1'-0"



3 A-. DOOR HEAD DET.
SCALE: 1-1/2" = 1'-0"



4 A-. DOOR JAMB DET
SCALE: 1-1/2" = 1'-0"

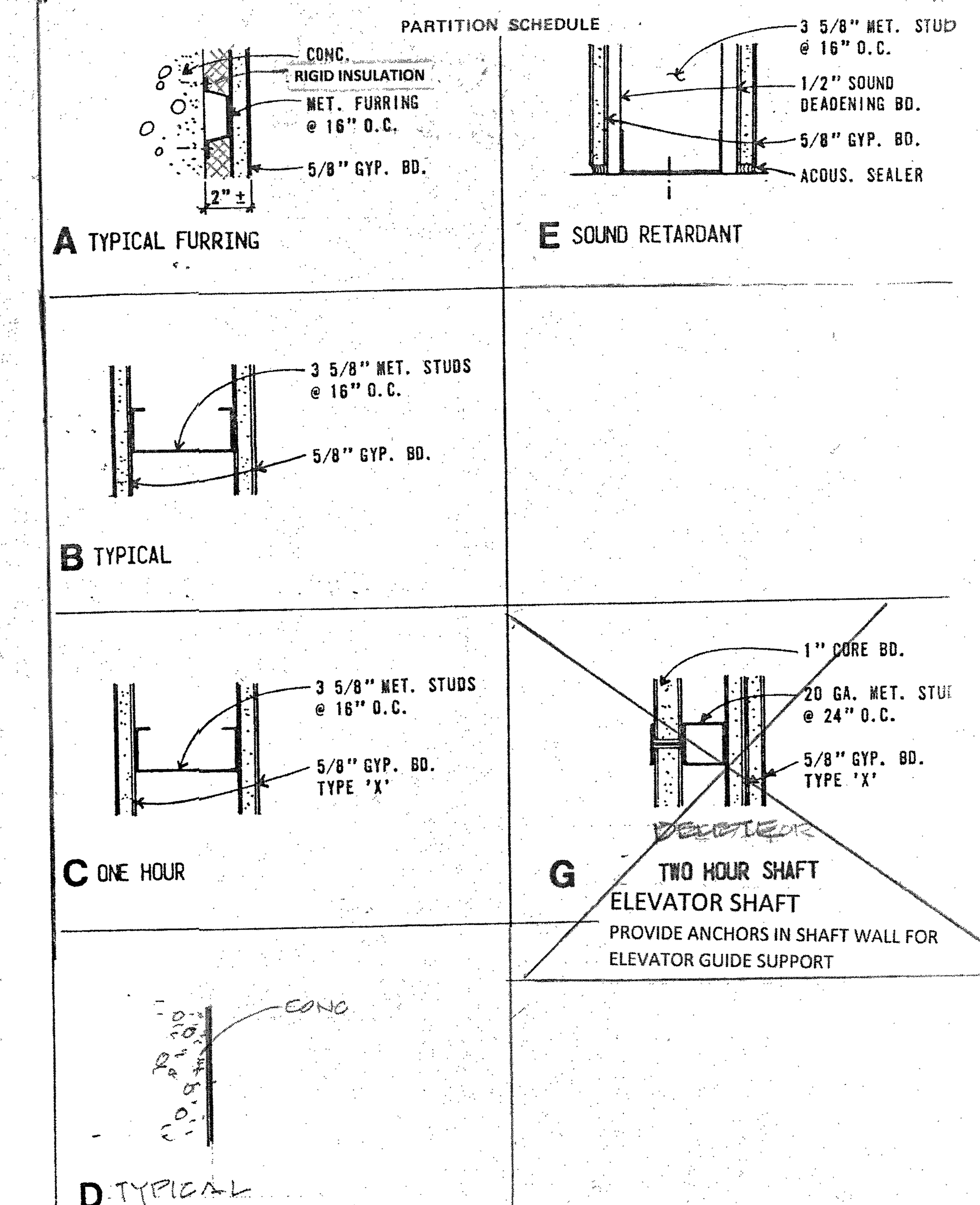
FAIRFIELD TOWNSHIP SENIOR CENTER

ITEM		UNISEX	TOILET ACCESSORIES MEN	WOMEN	BATTERY
soap disp	auto	1	1	1	
t. paper hold		1			
paper towel		1	1	1	
mirror	tilt	1	2	2	
lav faucet auto		1	2	2	yes
toilet flush		1			yes
toilet seat		1			
grb bar		3			
toilet seat cover		1			
trash bin		1	1	1	

INTERIOR ROOM FINISH SCHEDULE

ROOM NAME	FLOOR	BASE	WALLS	CEILING	REMARKS
LOWER LEVEL					
ELEC. RM.	Exist	NA	NA	Exposed	
STORAGE 1	Exist	NA	NA	Exposed	
MECH. Rm.	Exist	NA	NA	Exposed	
STORAGE 2	Exist	NA	NA	Exposed	
CORRIDOR/LOBBY	VCT	Vinyl	NA	ACT	
ROOM 1	VCT	Vinyl	NA	ACT	
ROOM 2	VCT	Vinyl	NA	ACT	
ROOM 3	VCT	Vinyl	NA	ACT	
TOILET	VCT	Vinyl	NA	ACT	
LAUNDRY	VCT	Vinyl	NA	ACT	
UPPER LEVEL					
JAN CLO	Exist	NA	NA	NA	
MEN T	NA	NA	NA	NA	
WOMEN T	NA	NA	NA	NA	
KITCHEN	VCT	Vinyl	NA	NA	
MAIN ROOM	NA	NA	NA	NA	
PANTRY	NA	NA	NA	NA	
					remove exist VCT install new VCT kitchen
					NA - not applicable

PARTITION SCHEDULE



PARTITION TYPES

No.	DESCRIPTION OF REVISION	DATE	DRAWN	CHECKED
1	REVISED FOR RE-BID	4-26-2024		

TOWNSHIP OF FAIRFIELD
CUMBERLAND COUNTY, NEW JERSEY

FAIRFIELD TOWNSHIP SENIOR CENTER

RENOVATIONS AND ADA IMPROVEMENTS

BLOCK 28, LOT 29.01

INTERIOR SCHEDULES AND DETAILS
ADA SIGN SCHEDULE AND DETAILS

CME ASSOCIATES
CONSULTING AND MUNICIPAL ENGINEERS
3141 BORDENTOWN AVENUE, PARLIN, NEW JERSEY 08859 — 1460 ROUTE 9 SOUTH, HOWELL, NEW JERSEY 07731-1194
821 N. MAIN STREET, PLEASANTVILLE, NEW JERSEY 08232 — 849 WEST BAY AVENUE, BARNEGAT, NEW JERSEY 08005-2164

JOHN H. ALLGAIR P.E., P.P. (1983 - 2001)
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JOHN J. STEFANI P.E., L.S. & P.P. NJ PE LS LIC NO. 24271 NJ PP LIC NO. 2089
JAY B. CORNELL P.E., P.P. NJ PE LIC NO. 32962 NJ PP LIC NO. 3674
MICHAEL J. McCLELLAND P.E., P.P. NJ PE LIC NO. 32468 NJ PP LIC NO. 3770
GREGORY R. VALESI P.E., P.P. NJ PE LIC NO. 34458 NJ PP LIC NO. 4361

GREGORY R. VALESI P.E., P.P.
NEW JERSEY PROFESSIONAL ENGINEER N.J. LIC. 34458

JAMES W. CASCARDI R.A.
ARCHITECT
849 West Bay Ave. Suite 16
Barnegat, New Jersey 08005
732 410 2650
NJ LIC NO. C-6826

SCALE: AS NOTED
DRAWN BY: RRM
DESIGNED BY: JWC
CHECKED BY: JWC
DATE: 4-26-2024
SHEET
TAB NAME:
DRAWING No.: A-10
FILE No.:

SPECIFICATIONS

GENERAL

CLASSIFICATION:	UNENCLOSED STAIR/PLATFORM LIFT
APPLIED CODE:	ASME A18.1: Sec 6 (Priv.) / Section 3 (Pub.) CSA B355 09
MODEL:	DELTA
CAPACITY:	550 Lbs (250 kg) ONE PERSON IN WHEELCHAIR
SPEED:	20 ft/min (0.1 m/s)
PLATFORM SIZE:	720x900 (28.35"x35.43") - 775x1250 (30.5"x49.2")
POWER SUPPLY:	110V,15A,60Hz,SINGLE PHASE

POWER UNIT

MOTOR:	24 VDC, 0.67 Hp
DRIVE SYSTEM:	RACK AND PINION

CONTROLLER

MODEL:	DELTA
TYPE:	CPFS
ETL #:	94307

PROJECT INFORMATIONS

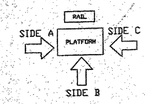
ACCESS TO PLATFORM:	IN LINE / SIDE ACCESS
SIDE OF INSTALLATION:	LEFT / RIGHT
ANGLE OF STAIRCASE:	X°
WIDTH OF STAIRCASE:	X"
LENGTH OF STAIRWAY:	X"
NUMBER OF RAIL:	1
NUMBER OF RISERS:	X
AVERAGE RISER:	X"
AVERAGE TREAD:	X"
LOCATION:	INDOOR / OUTDOOR
ANCHORING WALL:	WOOD/CONCRETE/N/A
ANCHORING POST:	WOOD/CONCRETE/N/A
TYPE OF INSTALLATION:	RESIDENTIAL / PUBLIC

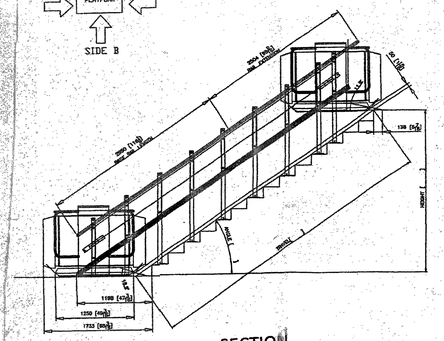
OPTIONS AVAILABLE:

ADDITIONAL BATTERY PACK:
SELF SUPPORT STAIR POST:
POST FOR CALL STATION:
ARM & MOTORIZED FOLDING PF:
FOLDING SEAT W/BELT:
INTERNATIONAL PACKAGE:
COLOR: RAL 7035, LIGHTEST GREY

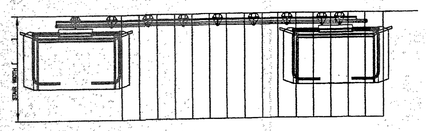
	LANDING 1	LANDING 2
	C	A
ENTRANCE SIDE CALL STN. MOUNTING	Surface Mount	Surface Mount

ENTRANCE LOCATIONS

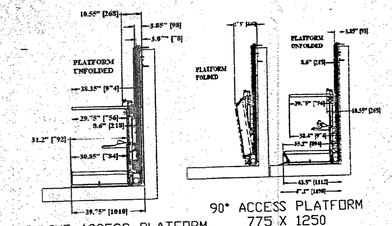




SECTION



PLAN



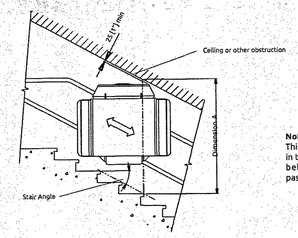
INLINE ACCESS PLATFORM
775 X 1250

90° ACCESS PLATFORM
775 X 1250

NOTE:
1. POST ADD 2.5" [63.5 mm]

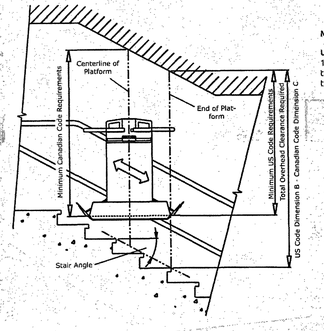
TYPICAL PLATFORM INFORMATION

Platform Running Clearances Required For Platform Folded Up



Note:
This running clearance is for the platform in the folded position only. See dimensions below for overhead requirements for passenger usage and codes.

Minimum Overhead Clearances To Meet Code Requirements



Minimum Code Requirements:

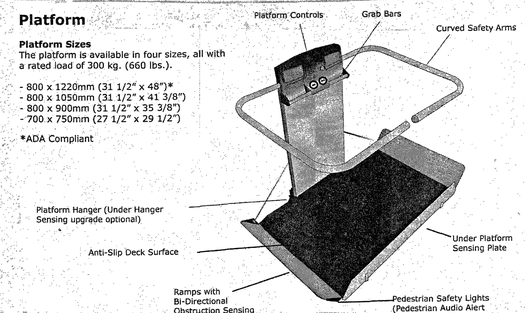
US Code (ASME A18.1)
1524mm (60") overhead clearance required to any point above the platform deck. Refer to Dimension B in chart on page 25.

Platform

Platform Sizes
The platform is available in four sizes, all with a rated load of 300 kg. (660 lbs.).

- 800 x 1220mm (31 1/2" x 48")*
- 800 x 1050mm (31 1/2" x 41 3/8")
- 800 x 900mm (31 1/2" x 35 3/8")
- 700 x 750mm (27 1/2" x 29 1/2")

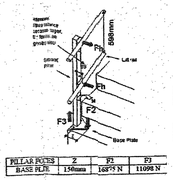
*ADA Compliant



Platform Components

SUPPORT LOAD DIAGRAM-

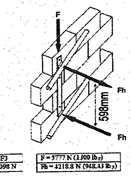
POST MOUNTED



POLAR MOMENT	Z	F2	F3
BASE PLATE	150mm	16875 N	11098 N

F = 3777 N (1,000 lbf)
Fh = 4218.8 N (948.13 lbf)

WALL MOUNTED



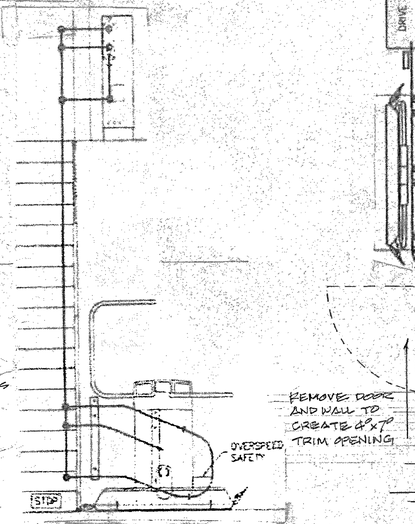
Provide power to battery charger 100-240 VAC single phase, 50/60 hz on a dedicated 15 amp circuit.

POSTMOUNTED
WOODE TREAD:
EACH IST MUST BE FIXED BY THROUH BOLTS AT EVERY HOLESAND REINFORCED PLATE LOCATD UNDER THE THREAD.

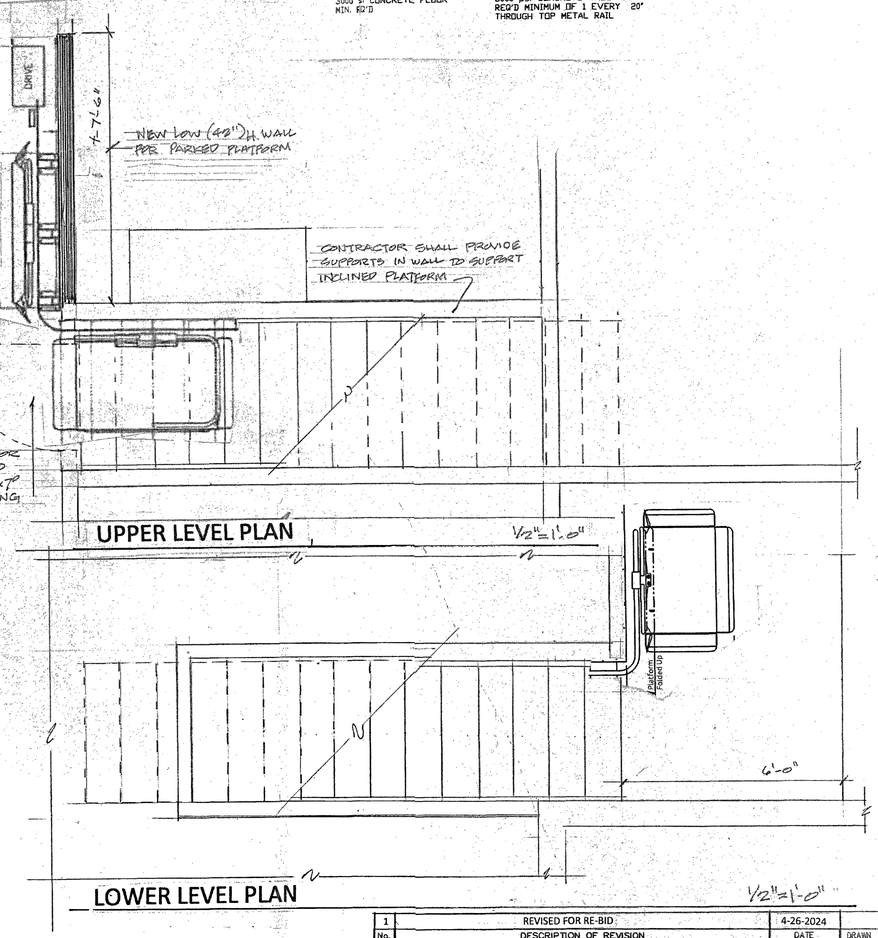
REINFORCED CONCRETE:
SLEEVE ANCHORS 1/2-3.0"
(EVERY HOLES) MAX.
TORQU 28 Ft-Lbs. MIN.
EMBEDENT DEPTH 2-1/4"
3000 ti CONCRETE FLOOR
MIN. REQ'D

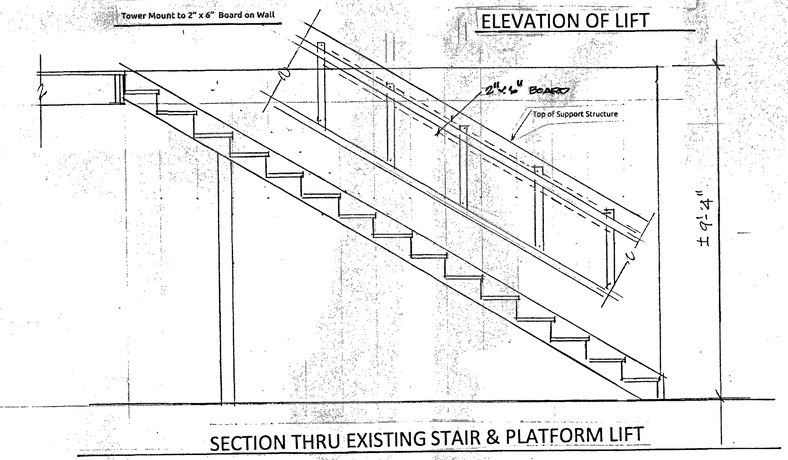
WALL MOUNTED
WOODEN LOAD
LAG BOLT HEX ø1/2 X 5"
MIN. EMBEDMENT DEPTH 3" INTO THE WOOD PREDRILL WOOD ø1/8" - MINIMUM OF 2 EVERY 16" THROUGH TOP METAL RAIL

REINFORCED CONCRETE
SLEEVE ANCHORS 1/2-3.0" @ 20"
C/C MAX. TORQUE: 28 Ft-Lbs.
MIN. EMBEDMENT DEPTH 1-5/8"
3000 psi CONCRETE WALL MIN.
REQ'D MINIMUM OF 1 EVERY 20"
THROUGH TOP METAL RAIL



ELEVATION OF LIFT





SECTION THRU EXISTING STAIR & PLATFORM LIFT

No.	DESCRIPTION OF REVISION	DATE	DRAWN	CHECKED
1	REVISED FOR RE-BID	4-26-2024		

TOWNSHIP OF FAIRFIELD
CUMBERLAND COUNTY, NEW JERSEY

FAIRFIELD MUNICIPAL BLDG. ADA IMPROVEMENTS
BLOCK 28 LOT 49

INCLINED PLATFORM LIFT PLAN, SECTIONS, DETAILS

CME ASSOCIATES
CONSULTING AND MUNICIPAL ENGINEERS
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JOHN H. ALLGAIR P.E., P.P. (1983 - 2001)
DAVID J. SAMUEL P.E., P.P. NJ PE LIC NO. 25535 NJ PP LIC NO. 2455
JOHN J. STEFANI P.E., L.S. & P.P. NJ PE LS LIC NO. 24271 NJ PP LIC NO. 2001
JAY B. CORNELL P.E., P.P. NJ PE LIC NO. 32862 NJ PP LIC NO. 3874
MICHAEL J. McCLELLAND P.E., P.P. NJ PE LIC NO. 33468 NJ PP LIC NO. 3776
GREGORY R. VALESI P.E., P.P. NJ PE LIC NO. 34458 NJ PP LIC NO. 4301

SCALE: AS NOTED — DRAWN BY: RRM
DESIGNED BY: JWC — CHECKED BY: JWC
DATE: 4-26-2024 — SHEET:
DRAWING NO.: A-11
TAB NAME:
FILE NO.:

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732 410 2650

James W. Cascardi
NJ LIC NO. C-6826

GREGORY R. VALESI P.E., P.P.
NEW JERSEY PROFESSIONAL ENGINEER N.J. LIC. 34458

SECTION 15010
BASIC MECHANICAL REQUIREMENTS

PART 1 - GENERAL

1.1 RECORD DOCUMENTS:

A. PREPARE RECORD DOCUMENTS TO INDICATE THE FOLLOWING INSTALLED CONDITIONS:

1. DUCTWORK MAINS AND BRANCHES, SIZE AND LOCATION, FOR BOTH EXTERIOR AND INTERIOR; LOCATIONS OF DAMPERS AND OTHER CONTROL DEVICES; FILTERS, BOXES, AND TERMINAL UNITS REQUIRING PERIODIC MAINTENANCE OR REPAIR.
2. EQUIPMENT LOCATIONS (EXPOSED AND CONCEALED), DIMENSIONED FROM PROMINET BUILDING LINES.
3. APPROVED SUBSTATIONS, CONTRACT MODIFICATIONS, AND ACTUAL EQUIPMENT AND MATERIALS INSTALLED.
4. CONTRACT MODIFICATIONS, ACTUAL EQUIPMENT AND MATERIALS INSTALLED.

1.2 MAINTENANCE MANUALS:

A. PREPARE MAINTENANCE MANUALS INCLUDING THE FOLLOWING INFORMATION FOR EQUIPMENT ITEMS:

1. DESCRIPTION OF FUNCTION, NORMAL OPERATING CHARACTERISTICS AND LIMITATIONS, PERFORMANCE CURVES, ENGINEERING DATA AND TESTS, AND COMPLETE NOMENCLATURE AND COMMERCIAL NUMBERS OF REPLACEMENT PARTS.
2. MANUFACTURE'S PRINTED OPERATING PROCEDURES TO INCLUDE START-UP, BREAK-IN, AND ROUTINE AND NORMAL OPERATING INSTRUCTIONS; REGULATION, CONTROL, STOPPING, SHUTDOWN AND EMERGENCY INSTRUCTIONS; AND SUMMER AND WINTER OPERATING INSTRUCTIONS.
3. MAINTENANCE PROCEDURES FOR ROUTINE PREVENTIVE MAINTENANCE AND TROUBLESHOOTING; DISASSEMBLY, REPAIR, AND REASSEMBLY; ALIGNING AND ADJUSTING INSTRUCTIONS.
4. SERVING INSTRUCTIONS AND LUBRICATION CHARS AND SCHEDULES.

1.3 DELIVERY, STORAGE, AND HANDLING:

A. DELIVER PRODUCTS TO THE PROJECT PROPERLY IDENTIFIED WITH NAMES, MODEL NUMBERS, TYPES, GRADES, COMPLIANCE LABELS, AND OTHER INFORMATION NEEDED FOR IDENTIFICATION.

PART 2 - PRODUCTS (NOT APPLICABLE)

PART 3 - EXECUTION

3.1 ROUGH-IN:

A. VERIFY FINAL LOCATIONS FOR ROUGH-INS WITH FIELD MEASUREMENTS AND WITH THE REQUIREMENTS OF THE ACTUAL EQUIPMENT TO BE CONNECTED.

3.2 MECHANICAL INSTALLATIONS:

A. GENERAL; SEQUENCE, COORDINATE, AND INTEGRATE THE VARIOUS ELEMENTS OF MECHANICAL SYSTEMS, MATERIALS, AND EQUIPMENT. COMPLY WITH THE FOLLOWING REQUIREMENTS;

1. COORDINATE MECHANICAL SYSTEMS, EQUIPMENT, AND MATERIALS INSTALLATION WITH OTHER BUILDING COMPONENTS.
2. VERIFY ALL DIMENSIONS BY FIELD MEASUREMENTS.
3. ARRANGE FOR CHASES, SLOTS, AND OPENINGS IN OTHER BUILDING COMPONENTS DURING PROGRESS OF CONSTRUCTION, TO ALLOW FOR MECHANICAL INSTALLATIONS.
4. COORDINATE THE INSTALLATION OF REQUIRED SUPPORTING DEVICES AND SLEEVES.
5. SEQUENCE, COORDINATE, AND INTEGRATE INSTALLATIONS OF MECHANICAL MATERIALS AND EQUIPMENT FOR EFFICIENT FLOW OF THE WORK.
6. WHERE MOUNTING HEIGHTS ARE NOT DETAILED OR DIMENSIONED, INSTALL SYSTEMS, MATERIALS, AND EQUIPMENT TO PROVIDE THE MAXIMUM HEADROOM POSSIBLE.
7. INSTALL SYSTEMS, MATERIALS, AND EQUIPMENT TO CONFORM WITH APPROVED SUBMITTAL DATA, INCLUDING COORDINATION DRAWINGS, TO GREATEST EXTENT POSSIBLE. CONFORM TO ARRANGEMENTS INDICATED BY THE CONTRACT DOCUMENTS, RECOGNIZING THAT PORTIONS OF THE WORK ARE SHOWN ONLY IN DIAGRAMMATIC FORM. PROVIDE FOR OFFSETS AND MINOR MODIFICATIONS IN THE LAYOUT TO ACCOMMODATE THE INSTALLATION AS INTENDED. WHERE COORDINATION REQUIREMENTS CONFLICT WITH INDIVIDUAL SYSTEM REQUIREMENTS, REFER CONFLICT TO THE ENGINEER.
8. INSTALL SYSTEMS, MATERIALS, AND EQUIPMENT LEVEL AND PLUMB, PARALLEL AND PERPENDICULAR TO OTHER BUILDING SYSTEMS AND COMPONENTS, WHERE INSTALLED EXPOSED IN FINISHED SPACES.
9. INSTALL MECHANICAL EQUIPMENT TO FACILITATE SERVICING, MAINTENANCE, AND REPAIR OR REPLACEMENT OF EQUIPMENT COMPONENTS. AS MUCH AS PRACTICAL, CONNECT EQUIPMENT FOR EASE OF DISCONNECTING, WITH MINIMUM OF INTERFERENCE WITH OTHER INSTALLATIONS. EXTEND GREASE FITTINGS TO AN ACCESSIBLE LOCATION.
10. INSTALL ACCESS PANEL OR DOORS WHERE UNITS ARE CONCEALED BEHIND FINISHED SURFACES.
11. INSTALL SYSTEMS, MATERIALS, AND EQUIPMENT GIVING RIGHT-OF-WAY PRIORITY TO SYSTEMS REQUIRED TO BE INSTALLED AT A SPECIFIED SLOPE.

3.3 CUTTING AND PATCHING:

A. PERFORM CUTTING, FITTING, AND PATCHING OF MECHANICAL EQUIPMENT AND MATERIALS REQUIRED TO:

1. UNCOVER WORK TO PROVIDE FOR INSTALLATION OF ILL-TIMED WORK.
2. REMOVE AND REPLACE DEFECTIVE WORK..
3. REMOVE AND REPLACE WORK NOT CONFORMING TO REQUIREMENTS OF THE CONTRACT DOCUMENTS.
4. INSTALL EQUIPMENT AND MATERIALS IN EXISTING STRUCTURES.
5. UPON WRITTEN INSTRUCTIONS FORM THE ARCHITECT, UNCOVER AND RESTORE WORK TO PROVIDE FOR ARCHITECT/ENGINEER OBSERVATION OF CONCEALED WORK.

B. CUT, REMOVE AND LEGALLY DISPOSE OF SELECTED MECHANICAL EQUIPMENT, COMPONENTS, AND MATERIALS AS INDICATED OR OTHERWISE AS REQUIRED TO DEMOLISH THE EXISTING SYSTEMS NO LONGER REQUIRED. INCLUDING BUT NOT LIMITED TO REMOVAL OF MECHANICAL PIPING, HEATING UNITS, PLUMBING FIXTURES AND TRIM, AND OTHER MECHANICAL ITEMS MADE OBSOLETE BY THE NEW WORK.

C. PROTECT THE STRUCTURE, FURNISHINGS, FINISHES, AND ADJACENT MATERIALS NOT INDICATED OR SCHEDULED TO BE REMOVED.

D. PROVIDE AND MAINTAIN TEMPORARY PARTITIONS OF DUST BARRIERS ADEQUATE TO PREVENT THE SPREAD OF DUST AND DIRT TO ADJACENT AREAS.

1. PATCH EXISTING FINISHED SURFACES AND BUILDING COMPONENTS USING NEW MATERIALS MATCHING EXISTING MATERIALS AND EXPERIENCED INSTALLERS. INSTALLERS' QUALIFICATIONS REFER TO THE MATERIALS AND METHODS REQUIRED FOR THE SURFACE AND BUILDING COMPONENTS BEING PATCHED.

SECTION 15050
BASIC MECHANICAL MATERIALS AND METHODS

PART 1 - GENERAL

1.1 PROJECT CONDITIONS:

A. CONDITIONS AFFECTING SELECTIVE DEMOLITION: THE FOLLOWING PROJECT CONDITIONS APPLY:

1. PROTECT ADJACENT MATERIALS INDICATED TO REMAIN.
2. WHEN SERVICES MUST BE INTERRUPTED, INSTALL TEMPORARY SERVICES FOR CONSTRUCTION.

1.2 SEQUENCE AND SCHEDULING:

A. COORDINATE THE SHUT-OFF AND DISCONNECTION OF UTILITY SERVICES WITH THE OWNERS AGENT.

B. NOTIFY THE ARCHITECT / ENGINEER AT LEAST 5 DAYS PRIOR TO COMMENCING DEMOLITION OPERATIONS.

PART 2 - PRODUCTS

2.1 MECHANICAL EQUIPMENT NAMEPLATE DATA:

A. NAMEPLATE: FOR EACH PIECE OF POWER OPERATED MECHANICAL EQUIPMENT PROVIDE A PERMANENT OPERATIONAL DATA NAMEPLATE INDICATING MANUFACTURER, PRODUCT NAME, MODEL NUMBER, SERIAL NUMBER, CAPACITY, OPERATING AND POWER CHARACTERISTICS, LABELS OF TESTED COMPLIANCE, AND SIMILAR ESSENTIAL DATA. LOCATE NAMEPLATES IN AN ACCESSIBLE LOCATION.

2.2 MISCELLANEOUS METALS:

A. STEEL PLATES, SHAPES, BARS, AND BAR GRATING: ASTM A 36.

B. COLD-FORMED STEEL TUBING: ASTM A 500.

C. HOT-ROLLED STEEL TUBING: ASTM A 501

D. STEEL PIPE: ASTM A 53, SCHEDULE 40, WELDED.

E. NON-SHRINK, NONMETALLIC GROUT: PREMIXED, FACTORY-PACKAGED, NON-STAINING, NON-CORROSIVE, NON-GASEOUS GROUT, RECOMMENDED FOR INTERIOR AND EXTERIOR APPLICATIONS.

F. FASTENERS: ZINC-COATED, TYPE, GRADE, AND CLASS AS REQUIRED.

2.3 MISCELLANEOUS LUMBER:

A. FRAMING MATERIALS: STANDARD GRADE, LIGHT-FRAMING-SIZE LUMBER OF ANY SPECIES. NUMBER 3 COMMON OR STANDARD GRADE BOARDS COMPLYING WITH WCLIB OR PRESERVATIVE TREATED IN ACCORDANCE WITH AWPB LP-2, AND KILN DRIED TO A MOISTURE CONTENT OF NOT MORE THAN 19 PERCENT.

B. CONSTRUCTION PANELS: PLYWOOD PANELS; APA C-D PLUGGED INT, WITH EXTERIOR GLUE; THICKNESS AS INDICATED, OR IF NOT INDICATED, NOT LESS THAT 15/32 INCHES.

PART 3 - EXECUTION

3.1 EXAMINATION:

A. EXAMINE SUBSTRATES, AREAS, AND CONDITIONS, EFFECTING THE PROPER EXECUTION OF THE WORK. DO NOT PROCEED WITH INSTALLATION UNTIL UNSATISFACTORY CONDITIONS HAVE BEEN CORRECTED.

3.2 SELECTIVE DEMOLITION:

A. GENERAL: DEMOLISH, REMOVE, DE-MOUNT, AND DISCONNECT ABANDONED MECHANICAL MATERIALS AND EQUIPMENT NO LONGER REQUIRED AND WHICH IS MADE OBSOLETE BY THE NEW WORK.

B. DISPOSAL AND CLEANUP: REMOVE FROM THE SITE AND LEGALLY DISPOSE OF DEMOLISHED MATERIALS AND EQUIPMENT NOT INDICATED TO BE SALVAGED.

C. MECHANICAL MATERIALS AND EQUIPMENT DEMOLISH, REMOVE, DE-MOUNT, AND DISCONNECT THE FOLLOWING ITEMS:

1. INACTIVE AND OBSOLETE PIPING, FITTINGS, AND SPECIALTIES, EQUIPMENT, DUCTWORK, CONTROLS, FIXTURES, AND INSULATION.
   - PIPING AND DUCTS EMBEDDED IN FLOORS, WALLS, AND CEILINGS MAY REMAIN IF SUCH MATERIALS DO NOT INTERFERE WITH NEW INSTALLATIONS. REMOVE MATERIALS ABOVE ACCESSIBLE CEILINGS. DRAIN AND CAP PIPING AND DUCTS ALLOWED TO REMAIN.

3.3 ERECTION OF METAL SUPPORTS AND ANCHORAGE:

A. CUT, FIT, AND PLACE MISCELLANEOUS METAL FABRICATIONS ACCURATELY IN LOCATION, ALIGNMENT, AND ELEVATION TO SUPPORT AND ANCHOR MECHANICAL MATERIALS AND EQUIPMENT.

B. FIELD WELDING: COMPLY WITH AWS "STRUCTURAL WELDING CODE".

3.4 ERECTION OF WOODS SUPPORTS AND ANCHORAGE:

A. CUT, FIT, AND PLACE WOOD GROUNDS, NAILERS, BLOCKING, AND ANCHORAGE ACCURATELY IN LOCATION, ALIGNMENT, AND ELEVATION TO SUPPORT AND ANCHOR MECHANICAL MATERIALS AND EQUIPMENT.

B. SELECT FASTENER SIZES THAT WILL NOT PENETRATE MEMBERS WHERE OPPOSITE SIDE WILL BE EXPOSED TO VIEW OR WILL RECEIVE FINISH MATERIALS. MAKE TIGHT CONNECTIONS BETWEEN MEMBERS. INSTALL FASTENERS WITHOUT SPLITTING WOOD MEMBERS.

C. ATTACH TO SUBSTRATES AS REQUIRED TO SUPPORT APPLIED LOADS.

SECTION 15055
BASIC PIPING MATERIALS AND METHODS

PART 1 - GENERAL

1.1 QUALITY ASSURANCE:

1. SOLDERING AND BRAZING PROCEDURES SHALL CONFORM TO ANSI B9.1 STANDARD SAFETY CODE FOR MECHANICAL REFRIGERATION.

1.2 DELIVERAY, STORAGE, AND HANDLING:

A. PROVIDE FACTORY-APPLIED PLASTIC END-CAPS ON EACH LENGTH OF PIPE AND TUBE, EXCEPT FOR CONCRETE, CORRUGATED METAL, HUB-AND-SPIGOT, CLAY PIPE. MAINTAIN END-CAPS THROUGH SHIPPING, STORAGE AND HANDLING TO PREVENT PIPE-END DAMAGE AND PREVENT ENTRANCE OF DIRT, DEBRIS, AND MOISTURE.

B. PROTECT STORED PIPES AND TUBES. ELEVATE ABOVE GRADE AND ENCLOSE WITH DURABLE, WATERPROOFING WRAPPING. WHEN STORED INSIDE, DO NOT EXCEED STRUCTURAL CAPACITY OF THE FLOOR.

C. PROTECT FLANGES, FITTINGS, AND SPECIALTIES FROM MOISTURE AND DIRT BY INSIDE STORAGE AND ENCLOSURE, OR BY PACKAGING WITH DURABLE, WATERPROOF WRAPPING.

PART 2 - PRODUCTS

2.1 PIPING SPECIALTIES:

A. ESCUTCHEONS: CHROME-PLATED, STAMPED STEEL, HINGED, SPLIT-RING ESCUTCHEON, WITH SET SCREW. INSIDE DIAMETER SHALL CLOSELY FIT PIPE OUTSIDE DIAMETER, OR OUTSIDE OF PIPE INSULATION WHERE PIPE IS INSULATED. OUTSIDE DIAMETER SHALL COMPLETELY COVER THE OPENING IN FLOORS, WALLS, OR CEILINGS.

B. UNIONS: MALLEABLE-IRON, CLASS 150 FOR LOW PRESSURE SERVICE AND CLASS 250 FOR HIGH PRESSURE SERVICE; HEXAGONAL STOCK WITH BALL-AND-SOCKET JOINTS, METAL-TO-METAL BRONZE SEATING SURFACES; FEMALE THREADED ENDS.

C. DIELECTRIC UNIONS: PROVIDE DIELECTRIC UNIONS WITH APPROPRIATE AND CONNECTIONS FOR THE PIPE MATERIALS IN WHICH INSTALLED (SCREW, SOLDERED, OR FLANGED), WHICH EFFECTIVELY ISOLATE DISSIMILAR METALS, PREVENT GALVANIC ACTION, AND STOP CORROSION.

D. DIELECTRIC WATERWAY FITTINGS: ELECTROPLATED STEEL OR BRASS NIPPLE, WITH AN INERT AND NON-CORROSIVE, THERMOPLASTIC LINING.

E. SLEEVES:

1. SHEET-METAL SLEEVES: 10 GAGE, GALVANIZED SHEET METAL, ROUND TUBE CLOSED WITH WELDED LONGITUDINAL JOINT.
2. STEEL SLEEVES: SCHEDULE 40 GALVANIZED, WELDED STEEL PIPE, ASTM A53, GRADE A.

PART 3 - EXECUTION

3.1 PREPARATION:

A. REAM ENDS OF PIPES AND TUBES, AND REMOVE BURRS. BEVEL PLAIN ENDS OF STEEL PIPE.

B. REMOVE SCALE, SLAG, DIRT, AND DEBRIS FOR BOTH INSIDE AND OUTSIDE OF PIPING AND FITTINGS BEFORE ASSEMBLY.

3.2 INSTALLATIONS:

A. GENERAL LOCATIONS AND ARRANGEMENTS: DRAWINGS (PLANS, SCHEMATICS, AND DIAGRAMS) INDICATE THE GENERAL LOCATION AND ARRANGEMENT OF THE PIPING SYSTEMS. LOCATION AND ARRANGEMENT OF PIPING LAYOUT TAKE INTO CONSIDERATION PIPE SIZING AND FRICTION LOSS, EXPANSION, PUMP SIZING, AND OTHER DESIGN CONSIDERATIONS. SO FAR AS PRACTICAL, INSTALL PIPING AS INDICATED. REFER TO INDIVIDUAL SYSTEM SPECIFICATIONS FOR REQUIREMENTS FOR COORDINATION DRAWING SUBMITTALS.

B. CONCEAL ALL PIPE INSTALLATIONS IN WALLS, PIPE CHASES, UTILITY SPACES, ABOVE CEILINGS, BELOW GRADE OR FLOORS, UNLESS INDICATED OTHERWISE.

C. INSTALL PIPING FREE OF SAGS OR BENDS AND WITH AMPLE SPACE BETWEEN PIPING TO PERMIT PROPER INSULATION APPLICATIONS.

D. INSTALL EXPOSED PIPING AT RIGHT ANGLES OR PARALLEL TO BUILDING WALLS. DIAGONAL RUNS ARE NOT PERMITTED, UNLESS EXPRESSLY INDICATED ON THE DRAWINGS.

E. INSTALL PIPING TIGHT TO SLABS, BEAMS, JOISTS, COLUMNS WALLS AND OTHER PERMANENT ELEMENTS OF THE BUILDING. PROVIDE SPACE TO PERMIT INSULATION APPLICATIONS, WITH 1" CLEARANCE OUTSIDE THE INSULATION. ALLOW SUFFICIENT SPACE ABOVE REMOVABLE CEILING PANELS TO ALLOW FOR PANEL REMOVAL.

F. LOCATE GROUPS OF PIPES PARALLEL TO EACH OTHER, SPACED TO PERMIT APPLYING FULL INSULATION AND SERVICING OF VALVES.

G. INSTALL DRAINS AT LOW POINTS IN MAINS, RISERS, AND BRANCH LINES CONSISTING OF A TEE FITTING, 3/4" BALL VALVE, AND SHORT 3/4" THREADED NIPPLE AND CAP.

H. FIRE BARRIER PENETRATIONS: WHERE PIPES PASS THROUGH FIRE RATED WALLS, PARTITIONS, CEILINGS, OR FLOORS, THE FIRE RATED INTEGRITY SHALL BE MAINTAINED.

3.3 FITTINGS AND SPECIALTIES:

A. USE FITTINGS FOR ALL CHANGES IN DIRECTION AND ALL BRANCH CONNECTIONS.

B. REMAKE LEAKING JOINTS USING NEW MATERIALS.

C. INSTALL UNIONS ADJACENT TO EACH VALVE, AND AT THE FINAL CONNECTION TO EACH PIECE OF EQUIPMENT AND PLUMBING FIXTURE HAVING 2" AND SMALLER CONNECTIONS, AND ELSEWHERE AS INDICATED.

D. INSTALL DIELECTRIC FITTINGS TO CONNECT PIPING MATERIALS OF DISSIMILAR METALS IN WET PIPING SYSTEMS.

SECTION 15140
SUPPORTS AND ANCHORS

PART 1 - GENERAL

1.1 QUALITY ASSURANCE:

A. REGULATORY REQUIREMENTS: COMPLY WITH APPLICABLE PLUMBING CODES PERTAINING TO PRODUCT MATERIALS AND INSTALLATION OF SUPPORTS AND ANCHORS.

B. NFPA COMPLIANCE: HANGERS AND SUPPORTS SHALL COMPLY WITH NFPA STANDARD NO. 13 WHEN USED AS A COMPONENT OF A FIRE PROTECTION SYSTEM.

C. UL AND FM COMPLIANCE: HANGERS, SUPPORTS, AND COMPONENTS SHALL BE LISTED AND LABELED BY UL AND FM WHERE USED FOR FIRE PROTECTION PIPING SYSTEMS.

D. NATIONALLY RECOGNIZED TESTING LABORATORY AND NEMA COMPLIANCE (NRTL): HANGERS, SUPPORTS, AND COMPONENTS SHALL BE LISTED AND LABELED BY A NRTL WHERE USED FOR FIRE PROTECTION PIPING SYSTEMS. THE TERM "NRTL" SHALL BE AS DEFINED IN OSHA REGULATION 1910.7.

PART 2 - PRODUCTS:

2.1 MANUFACTURED UNITS:

A. HANGERS AND SUPPORT COMPONENTS SHALL BE FACTORY FABRICATED OF MATERIALS, DESIGN, AND MANUFACTURER COMPLYING WITH MSS SP-58.

1. COMPONENTS SHALL HAVE GALVANIZED COATINGS WHERE INSTALLED FOR PIPING AND EQUIPMENT THAT WILL NOT HAVE FIELD-APPLIED FINISH.
2. PIPE ATTACHMENTS SHALL HAVE NONMETALLIC COATING FOR ELECTROLYTIC PROTECTION WHERE ATTACHMENTS ARE IN DIRECT CONTACT WITH COPPER TUBING.

2.2 MISCELLANEOUS MATERIALS:

A. STEEL PLATES, SHAPES, AND BARS: ASTM A 36.

B. CEMENT GROUT: PORTLAND CEMENT (ASTM C 150, TYPE I OR TYPE III) AND CLEAN UNIFORMLY GRADED, NATURAL SAND (ASTM C 404, SIZE NO. 2). MIX RATIO SHALL BE 1.0 PART CEMENT TO 3.0 PARTS SAND, BY VOLUME, WITH MINIMUM AMOUNT OF WATER REQUIRED FOR PLACEMENT AND HYDRATION.

PART 3 - EXECUTION:

3.1 EXAMINATION:

A. EXAMINE SUB-STATES, AND CONDITIONS UNDER WHICH SUPPORTS AND ANCHORS ARE TO BE INSTALLED. DO NOT PROCEED WITH INSTALLING UNTIL UNSATISFACTORY CONDITIONS HAVE BEEN CORRECTED.

3.2 INSTALLATION OF HANGERS AND SUPPORTS:

A. GENERAL: INSTALL HANGERS, SUPPORTS, CLAMPS AND ATTACHMENTS TO SUPPORT PIPING PROPERLY FROM BUILDING STRUCTURE; COMPLY WITH MSS SP-69 AND SP-89. ARRANGE FOR GROUPING OF PARALLEL RUNS OF HORIZONTAL PIPING. INSTALL SUPPORTS WITH MAXIMUM SPACING COMPLYING WITH MSS SP-69. WHERE PIPING OF VARIOUS SIZES IS SUPPORTED TOGETHER BY TRAPEZE HANGERS, SPACE HANGERS FOR SMALLEST PIPE SIZE OR INSTALL INTERMEDIATE SUPPORTS FOR SMALLER DIAMETER PIPE AS SPECIFIED ABOVE FOR INDIVIDUAL PIPE HANGERS.

B. INSTALL BUILDING ATTACHMENTS WITHIN CONCRETE OR TO STRUCTURAL STEEL. SPACE ATTACHMENTS WITHIN MAXIMUM PIPING SPAN LENGTH INDICATED IN MSS SP-69. INSTALL ADDITIONAL ATTACHMENTS AT CONCENTRATED LOADS, INCLUDING VALVES, FLANGES, GUIDES, STRAINERS, EXPANSION JOINTS, AND AT CHANGES IN DIRECTION OF PIPING.

C. INSTALL HANGERS AND SUPPORTS COMPLETE WITH NECESSARY INSERTS, BOLTS, RODS, NUTS WASHERS, AND OTHER ACCESSORIES.

D. FIELD-FABRICATED, HEAVY-DUTY STEEL TRAPEZES: FABRICATE FROM STEEL SHAPES SELECTED FOR LOADS REQUIRED; WELD STEEL IN ACCORDANCE WITH AWS D-1.1.

E. SUPPORT FIRE PROTECTION SYSTEMS PIPING INDEPENDENTLY FROM OTHER PIPING SYSTEMS.

F. INSTALL HANGERS AND SUPPORTS TO ALLOW CONTROLLED MOVEMENT OF PIPING SYSTEMS, TO PERMIT FREEDOM OF MOVEMENT BETWEEN PIPE ANCHORS, AND TO FACILITATE ACTION OF EXPANSION JOINTS, EXPANSION LOOPS, EXPANSION BENDS AND SIMILAR UNITS.

G. LOAD DISTRIBUTION: INSTALL HANGERS AND SUPPORTS SO THAT PIPING LIVE AND DEAD LOADING AND STRESSES FROM MOVEMENT WILL NOT BE TRANSMITTED TO CONNECTED EQUIPMENT.

H. PIPE SLOPES: INSTALL HANGERS AND SUPPORTS TO PROVIDE INDICATED PIPE SLOPES, AND SO THAT MAXIMUM PIPE DEFLECTIONS ALLOWED BY ASME B31.9 BUILDING SERVICES PIPING CODE IS NOT EXCEEDED.

I. INSULATED PIPING: COMPLY WITH THE FOLLOWING INSTALLATION REQUIREMENTS.

1. CLAMPS: ATTACH CLAMPS, INCLUDING SPACERS (IF ANY), TO PIPING WITH CLAMPS PROJECTING THROUGH INSULATION; DO NOT EXCEED PIPE STRESSES ALLOWED BY ASME B31.9.
2. SADDLES: INSTALL PROTECTION SADDLES MSS TYPE 39 WHERE INSULATION WITHOUT VAPOR BARRIER IS INDICATED. FILL INTERIOR VOIDS WITH SEGMENTS OF INSULATION THAT MATCH ADJOINING PIPE INSULATION.
3. SHIELDS: INSTALL PROTECTIVE SHIELDS MSS TYPE 40 ON COLD WATER PIPING THAT HAS VAPOR BARRIER.

3.3 INSTALLATION OF ANCHORS:

A. INSTALL ANCHORS AT PROPER LOCATIONS TO PREVENT STRESSES FROM EXCEEDING THOSE PERMITTED BY ASME B31.9 AND TO PREVENT OF LOADING AND STRESSES TO CONNECTED EQUIPMENT.

B. FABRICATE AND INSTALL ANCHORS BY WELDING STEEL SHAPES, PLATES, AND BARS TO PIPING AND TO STRUCTURE. COMPLY WITH ASME B31.9 AND WITH AWS STANDARDS D1.1.

C. WHERE EXPANSION COMPENSATORS ARE INDICATED, INSTALL ANCHORS IN ACCORDANCE WITH EXPANSION UNIT MANUFACTURER'S WRITTEN INSTRUCTIONS TO CONTROL MOVEMENT TO COMPENSATORS.

D. ANCHOR SPACING: WHERE NOT OTHERWISE INDICATED, INSTALL ANCHORS AT ENDS OF PRINCIPAL PIPE RUNS, AT INTERMEDIATE POINTS IN PIPE RUNS BETWEEN EXPANSION LOOPS AND BENDS. MAKE PROVISIONS FOR PRESET OF ANCHORS AS REQUIRED TO ACCOMMODATE BOTH EXPANSION AND CONTRACTION OF PIPING.

3.4 EQUIPMENT SUPPORTS:

A. FABRICATE STRUCTURAL STEEL STANDS TO SUSPEND EQUIPMENT FROM STRUCTURE ABOVE OR SUPPORT EQUIPMENT ABOVE FLOOR.

B. GROUTING: PLACE GROUT UNDER SUPPORTS FOR PIPING AND EQUIPMENT.

3.5 METAL FABRICATION:

A. CUT, DRILL, AND FIT MISCELLANEOUS MEAL FABRICATIONS FOR PIPE ANCHORS AND EQUIPMENT SUPPORTS. INSTALL AND ALIGN FABRICATED ANCHORS IN INDICATED LOCATIONS.

B. FIT EXPOSED CONNECTIONS TOGETHER TO FORM HAIRLINE JOINTS. FIELD WELD CONNECTIONS THAT CANNOT BE SHOP WELDED BECAUSE OF SHIPPING SIZE LIMITATIONS.

C. FIELD WELDING: COMPLY WITH AWS D1.1 FOR PROCEDURES OF MANUAL SHIELDED METAL-ARC WELDING, APPEARANCE AND QUALITY OF WELDS MADE, METHODS USED IN CORRECTING WELDING WORK, AND THE FOLLOWING:

1. USE MATERIAL AND METHODS THAT MINIMIZE DISTORTION AND DEVELOP STRENGTH AND CORROSION RESISTANCE OF BASE METALS.
2. OBTAIN FUSION WITHOUT UNDERCUT OR OVERLAP.
3. REMOVE WELDING FLUX IMMEDIATELY.
4. FINISH WELDS AT EXPOSED CONNECTIONS SO THAT NO ROUGHNESS SHOWS AFTER FINISHING, AND SO THAT CONTOURS WELDED SURFACES TO MATCH ADJACENT CONTOURS.

3.6 ADJUSTING:

A. HANGER ADJUSTMENT: ADJUST HANGERS TO DISTRIBUTE LOADS EQUALLY ON ATTACHMENTS AND TO ACHIEVE INDICATED SLOPE OF PIPE.

B. TOUCH-UP PAINTING: IMMEDIATELY AFTER ERECTION OF ANCHORS AND SUPPORTS, CLEAN FIELD WELDS AND ABRADED AREAS OF SHOP PAINT EXPOSED AREAS WITH SAME MATERIAL AS USED FOR SHOP PAINTING TO COMPLY WITH SSPC-PA-1 REQUIREMENTS FOR TOUCH-UP OF FIELD-PAINTED SURFACES.

1. APPLY BY BRUSH OR SPRAY TO PROVIDE A MINIMUM DRY FILM THICKNESS OF .2.0 MILS.

C. FOR GALVANIZED SURFACES CLEAN WELDS BOLTED CONNECTIONS AND ABRADED AREAS AND SUPPLY GALVANIZING REPAIR PAINT TO COMPLY WITH ASTM A 780.

SECTION 15190
MECHANICAL IDENTIFICATION

1.1 QUALITY ASSURANCE:

A. MANUFACTURER'S QUALIFICATIONS: FIRMS REGULARLY ENGAGED IN MANUFACTURER IDENTIFICATION DEVICES OF TYPES AND SIZES REQUIRED, WHOSE PRODUCTS HAVE BEEN IN SATISFACTORY USE IN SIMILAR SERVICE FOR NOT LESS THAN 5 YEARS.

B. CODES AND STANDARDS:

1. ANSI STANDARDS: COMPLY WITH ANSI A 13.1 FOR LETTERING SIZE, LENGTH OF COLOR FIELD, COLORS, AND VIEWING ANGLES OF IDENTIFICATION DEVICES.

PART 2 - PRODUCTS

2.1 PLASTIC TAPE:

A. GENERAL: PROVIDE MANUFACTURER'S STANDARD COLOR-CODED PRESSURE-SENSITIVE (SELF-ADHESIVE) VINYL TAPE, NOT LESS THAN 3 MILS THICK.

B. WIDTH: PROVIDE 1 1/2" WIDE TAPE MARKERS ON PIPES WITH OUTSIDE DIAMETERS (INCLUDING INSULATION, IF ANY) OF LESS THAN 6", 2 1/2" WIDE TAPE FOR LARGER PIPES.

C. COLOR: COMPLY WITH ANSI A13.1, EXCEPT WHERE ANOTHER COLOR SELECTION IS INDICATED.

2.2 ENGRAVED PLASTIC-LAMINATE SIGNS:

A. GENERAL: PROVIDE ENGRAVING STOCK MELAMINE PLASTIC LAMINATE, COMPLYING WITH FS L-P-387, IN THE SIZES AND THICKNESS INDICATED, ENGRAVED WITH ENGRAVER'S STANDARD LETTER STYLE OF THE SIZES AND WORDING INDICATED, BLACK WITH WHITE CORE (LETTER COLOR) EXCEPT AS OTHERWISE INDICATED, PUNCHED FOR MECHANICAL FASTENING EXCEPT WHERE ADHESIVE MOUNTING IS NECESSARY BECAUSE OF SUBSTRATE.

B. THICKNESS: 1/16" FOR UNITS UP TO 20 SQ. IN. OR 8" LENGTH; 1/8" FOR LARGER UNITS.

C. FASTENERS: SELF-TAPPING STAINLESS STEEL SCREWS, EXCEPT CONTACT-TYPE PERMANENT ADHESIVE WHERE SCREWS CANNOT OR SHOULD NOT PENETRATE THE SUBSTRATE.

2.3 LETTERING AND GRAPHICS:

A. GENERAL: COORDINATE NAMES, ABBREVIATIONS AND OTHER DESIGNATIONS USED IN MECHANICAL IDENTIFICATION WORK, WITH CORRESPONDING DESIGNATIONS SHOWN, SPECIFIED OR SCHEDULED. PROVIDE NUMBERS, LETTERING AND WORDING AS INDICATED OR, IF NOT OTHERWISE INDICATED, AS RECOMMENDED BY MANUFACTURERS OR AS REQUIRED FOR PROPER IDENTIFICATION AND OPERATION/MAINTENANCE OF MECHANICAL SYSTEMS AND EQUIPMENT.

1. MULTIPLE SYSTEMS: WHERE MULTIPLE SYSTEMS OF SAME GENERIC NAME ARE SHOWN AND SPECIFIED, PROVIDE IDENTIFICATION WHICH INDICATES INDIVIDUAL SYSTEM NUMBER AS WELL AS SERVICE (AS EXAMPLES; BOILER NO. 3, AIR SUPPLY NO. 1H, STANDPIPE F12).

PART 3 - EXECUTION

3.1 GENERAL INSTALLATION REQUIREMENTS:

A. COORDINATION: WHERE IDENTIFICATION IS TO BE APPLIED TO SURFACES WHICH REQUIRE INSULATION, PAINTING OR OTHER COVERING OF FINISH, INCLUDING VALVE TAGS IN FINISHED MECHANICAL SPACES, INSTALL IDENTIFICATION AFTER COMPLETION OF COVERING AND PAINTING. INSTALL IDENTIFICATION PRIOR TO INSTALLATION OF ACOUSTICAL CEILINGS AND SIMILAR REMOVABLE CONCEALMENT.

3.2 DUCTWORK IDENTIFICATION:

A. GENERAL: IDENTIFY AIR SUPPLY, RETURN, EXHAUST, INTAKE AND RELIEF DUCTWORK WITH DUCT MARKERS; OR PROVIDE STENCILED SIGNS AND ARROWS, SHOWING DUCTWORK SERVICE AND DIRECTION FLOW, IN BLACK OR WHITE (WHICHEVER PROVIDES MOST CONTRAST WITH DUCTWORK COLOR).

B. LOCATION: IN EACH SPACE WHERE DUCTWORK IS EXPOSED, OR CONCEALED ONLY BY REMOVABLE CEILING SYSTEM, LOCATE SIGNS NEAR POINTS WHERE DUCTWORK ORIGINATES OR CONTINUES INTO CONCEALED ENCLOSURES (SHAFT, UNDERGROUND OR SIMILAR CONCEALMENT), AND AT 50' SPACING ALONG EXPOSED RUNS.

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SUBMISSION:
12/13/2023 - REVIEW/COORDINATION
12/30/2023 - BIDDING
1/15/2024 - PERMITS
4/23/2024 - REDESIGN FOR REVIEW/ COORDINATION
4/26/2024 - REVISION 1 REVISED FOR RE-BID

NJ PROFESSIONAL ENGINEER No. 24GE03895900
PA PROFESSIONAL ENGINEER No. PE075142
DE PROFESSIONAL ENGINEER No. 17464
NY PROFESSIONAL ENGINEER No. 088381
MD PROFESSIONAL ENGINEER No. 36281
CT PROFESSIONAL ENGINEER No. 0031563
FL PROFESSIONAL ENGINEER No. 71354

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MECHANICAL/ELECTRICAL SPECIFICATIONS
FOR
FAIRFIELD TOWNSHIP SENIOR CENTER RENOVATIONS AND ADA IMPROVEMENTS
SITUATED AT
68 FAIRTON-GOULDTOWN RD.
BRIDGETON, NJ 08302

SCALE:	AS NOTED
DATE:	1/15/2024
DRAWN BY:	KJG
CHECKED BY:	DJF
APPROVED BY:	DAL SR

DWG NO.
M/E1

3.3 PIPING SYSTEM IDENTIFICATION:

A. GENERAL: INSTALL PIPE MARKERS OF ONE OF THE FOLLOWING TYPES ON EACH SYSTEM INDICATED TO RECEIVE IDENTIFICATION, AND INCLUDE ARROWS TO SHOW NORMAL DIRECTION OF FLOW:

B. LOCATE PIPE MARKERS AND COLOR BANDS AS FOLLOWS WHEREVER PIPING IS EXPOSED TO VIEW IN OCCUPIED SPACES, MACHINE ROOMS, ACCESSIBLE MAINTENANCE SPACES (SHAFTS, TUNNELS, PLENUMS) AND EXTERIOR NON-CONCEALED LOCATIONS.

1. NEAR EACH VALVE AND CONTROL DEVICE.
2. NEAR EACH BRANCH, EXCLUDING SHORT TAKE-OFFS FOR FIXTURES AND TERMINAL UNITS; MARK EACH PIPE AT BRANCH, WHERE THERE COULD BE QUESTION OF FLOW PATTERN.
3. NEAR LOCATIONS WHERE PIPES PASS THROUGH WALLS OR FLOORS/CEILINGS, OR ENTER NON-ACCESSIBLE ENCLOSURES.
4. AT ACCESS DOORS, MANHOLES AND SIMILAR ACCESS POINTS WHICH PERMIT VIEW OF CONCEALED PIPING.
5. NEAR MAJOR EQUIPMENT ITEMS AND OTHER POINTS OF ORIGINATION AND TERMINATION.
6. SPACED INTERMEDIATELY AT MAXIMUM SPACING OF 50' ALONG EACH PIPING RUN, EXCEPT REDUCE SPACING TO 25' IN CONGESTED AREAS OF PIPING AND EQUIPMENT.
7. ON PIPING ABOVE REMOVABLE ACOUSTICAL CEILINGS, EXCEPT OMIT INTERMEDIATELY SPACED MARKERS.

3.4 MECHANICAL EQUIPMENT IDENTIFICATION:

A. GENERAL: INSTALL ENGRAVED PLASTIC LAMINATE SIGN OR PLASTIC EQUIPMENT MARKER ON OR NEAR EACH MAJOR ITEM OF MECHANICAL EQUIPMENT AND EACH OPERATIONAL DEVICE, AS SPECIFIED HEREIN IF NOT OTHERWISE SPECIFIED FOR EACH ITEM OR DEVICE.

B. LETTERING SIZE: MINIMUM 1/4" HIGH LETTERING FOR NAME OF UNIT WHERE VIEWING DISTANCE IS LESS THAN 2'-0", 1/2" HIGH FOR DISTANCES UP TO 6'-0", AND PROPORTIONATELY LARGER LETTERING FOR GREATER DISTANCES. PROVIDE SECONDARY LETTERING OF 2/3 TO 3/4 OF SIZE OF THE PRINCIPAL LETTERING.

3.5 ADJUSTING AND CLEANING:

A. ADJUSTING: RELOCATE ANY MECHANICAL IDENTIFICATION DEVICE WHICH HAS BECOME VISUALLY BLOCKED BY WORK OF THIS DIVISION OR OTHER DIVISIONS.

B. CLEANING: CLEAN FACE OF IDENTIFICATION DEVICES, AND GLASS FRAMES OF VALVE CHARTS.

SECTION 15250
MECHANICAL INSULATION

PART 1 - GENERAL

1.1 QUALITY ASSURANCE:

A. MANUFACTURER'S QUALIFICATIONS: FIRMS REGULARLY ENGAGED IN MANUFACTURE OF MECHANICAL INSULATION PRODUCTS, OF TYPES AND SIZES REQUIRED, WHOSE PRODUCTS HAVE BEEN IN SATISFACTORY USE IN SIMILAR SERVICES FOR NOT LESS THAN 3 YEARS.

B. INSTALLER'S QUALIFICATIONS: FIRM WITH AT LEAST 5 YEARS SUCCESSFUL INSTALLATION EXPERIENCE ON PROJECTS WITH MECHANICAL INSULATIONS SIMILAR TO THAT REQUIRED FOR THIS PROJECT.

C. FLAME/SMOKE RATINGS: PROVIDE COMPOSITE MECHANICAL INSULATION (INSULATION, JACKETS, COVERINGS, SEALERS, MASTICS AND ADHESIVES) WITH FLAME-SPREAD INDEX OF 25 OR LESS, AND SMOKE-DEVELOPED INDEX OF 50 OR LESS, AS TESTED BY ASTM E 84 (NFPA 255) METHOD.

1.2 DELIVERY, STORAGE, AND HANDLING:

A. DELIVER INSULATION, COVERINGS, CEMENTS, ADHESIVES, AND COATINGS TO SITE IN CONTAINERS WITH MANUFACTURER'S STAMP OR LABEL, AFFIXED SHOWING FIRE HAZARD INDEXES OF PRODUCTS.

B. PROTECT INSULATION AGAINST DIRT, WATER, AND CHEMICAL AND MECHANICAL DAMAGE. DO NOT INSTALL DAMAGED OR WET INSULATION; REMOVE FORM PROJECT SITE.

PART 2 - PRODUCTS

2.1 PIPING INSULATION MATERIALS:

A. FIBERGLASS PIPING INSULATION: ASTM C 547, CLASS 1 UNLESS OTHERWISE INDICATED.

B. JACKETS FOR PIPING INSULATION: ASTM C 921, TYPE 1 FOR PIPING WITH TEMPERATURES BELOW AMBIENT,M TYPE II FOR PIPING WITH TEMPERATURES ABOVE AMBIENT. TYPE I MAY BE USED FOR ALL PIPING AT INSTALLERS OPTION.

1. ENCASE PIPE FITTINGS INSULATION WITH ONE-PIECE PRE-MOLDED PVC FITTING COVERS, FASTENED AS PER MANUFACTURER'S RECOMMENDATIONS.

C. STAPLES, BANDS, WIRES, AND CEMENT: AS RECOMMENDED BY INSULATION MANUFACTURER FOR APPLICATIONS INDICATED.

D. ADHESIVES, SEALERS, AND PROTECTIVE FINISHES: AS RECOMMENDED BY INSULATION MANUFACTURER FOR APPLICATIONS INDICATED.

PART 3 - EXECUTION

3.1 INSPECTION:

A. EXAMINE AREAS AND CONDITIONS UNDER WHICH MECHANICAL INSULATION IS TO BE INSTALLED. DO NOT PROCEED WITH WORK UNTIL UNSATISFACTORY CONDITIONS HAVE BEEN CORRECTED IN MANNER ACCEPTABLE TO INSTALLER.

3.2 PLUMBING PIPING SYSTEM INSULATION:

A. INSULATION OMITTED: OMIT INSULATION ON CHROME-PLATED EXPOSED PIPING (EXCEPT FOR HANDICAPPED FIXTURES), AIR CHAMBERS, UNIONS, STRAINERS, CHECK VALVES, BALANCE COCKS, FLOW REGULATORS, DRAIN LINES FROM WATER COOLERS, DRAINAGE PIPING LOCATED IN CRAWL SPACES OR TUNNELS, BURIED PIPING, FIRE PROTECTION PIPING, AND PRE-INSULATED EQUIPMENT.

B. COLD PIPING:

1. APPLICATION REQUIREMENTS: INSULATE THE FOLLOWING COLD PLUMBING PIPING SYSTEMS:
   - POTABLE COLD WATER PIPING.
   - PLUMBING VENTS WITHIN 6 LINEAL FEET OF ROOF OUTLET.
2. INSULATE EACH PIPING SYSTEM SPECIFIED ABOVE WITH ONE OF THE FOLLOWING TYPES AND THICKNESS OF INSULATION..
   - FIBERGLASS: 1" THICKNESS

C. HOT PIPING:

1. APPLICATION REQUIREMENTS: INSULATE THE FOLLOWING HOT PLUMBING PIPING SYSTEMS.
   - POTABLE HOT WATER PIPING.
   - POTABLE HOT WATER RE-CIRCULATING PIPING.
2. INSULATE EACH PIPING SYSTEM SPECIFIED ABOVE WITH ONE OF THE FOLLOWING TYPES AND THICKNESS OF INSULATION:
   - FIBERGLASS: 1" THICKNESS FOR PIPE SIZES UP TO AND INCLUDING 6", 1 1/2" THICK FOR PIPE SIZES OVER 6".

3.3 INSTALLATION OF PIPING INSULATION:

A. GENERAL: INSTALL INSULATION PRODUCTS IN ACCORDANCE WITH MANUFACTURER'S WRITTEN INSTRUCTIONS, AND IN ACCORDANCE WITH RECOGNIZED INDUSTRY PRACTICES TO ENSURE THAT INSULATION SERVES ITS INTENDED PURPOSE.

B. INSTALL INSULATION ON PIPE SYSTEMS SUBSEQUENT TO INSTALLATION OF HEATING TRACING, PAINTING, TESTING, AND ACCEPTANCE OF TESTS.

C. INSTALL INSULATION MATERIALS WITH SMOOTH AND EVEN SURFACES. INSULATE EACH CONTINUOUS RUN OF PIPING WITH FULL-LENGTH UNITS OF INSULATION, WITH A SINGLE CUT PIECE TO COMPLETE RUN. DO NOT USE CUT PIECES OR SCRAPS ABUTTING EACH OTHER.

D. CLEAN AND DRY PIPE SURFACES PRIOR TO INSULATING. BUTT INSULATION JOINTS FIRMLY TOGETHER TO ENSURE A COMPLETE AND TIGHT FIT OVER SURFACES TO BE COVERED..

E. MAINTAIN INTEGRITY OF VAPOR-BARRIER JACKETS ON PIPE INSULATION, AND PROTECT TO PREVENT PUNCTURE OR OTHER DAMAGE.

F. COVER VALVES, FITTINGS AND SIMILAR ITEMS IN EACH PIPING SYSTEM WITH EQUIVALENT THICKNESS AND COMPOSITION OF INSULATION AS APPLIED TO ADJOINING PIPE RUN. INSTALL FACTORY MOLDED, PRECUT OR JOB FABRICATED UNITS (AT INSTALLER'S OPTION) EXCEPT WHERE SPECIFIED FORM OR TYPE IS INDICATED.

G. EXTEND PIPING INSULATION WITHOUT INTERRUPTION THROUGH WALLS, FLOORS, AND SIMILAR PIPING PENETRATIONS, EXCEPT WHERE OTHERWISE INDICATED.

H. BUTT PIPE INSULATION AGAINST PIPE HANGER INSULATION INSERTS. FOR HOT PIPES, APPLY 3" WIDE VAPOR BARRIER TAPE OR BAND OVER THE BUTT JOINTS. FOR COLD WATER PIPING APPLY WET COAT OF VAPOR BARRIER LAP CEMENT ON BUTT JOINTS AND SEAL JOINTS WITH 3" WIDE VAPOR BARRIER TAPE OR BAND.

3.4 EXISTING INSULATION REPAIR:

A. REPAIR DAMAGED SECTIONS OF EXISTING MECHANICAL INSULATION, BOTH PREVIOUSLY DAMAGED OR DAMAGED DURING THIS CONSTRUCTION PERIOD. USE INSULATION OF SAME THICKNESS AS EXISTING INSULATION, INSTALL NEW JACKET LAPPING AND SEALED OVER EXISTING.

3.5 PROTECTION AND REPLACEMENT:

A. REPLACE DAMAGED INSULATION WHICH CANNOT BE REPAIRED SATISFACTORY, INCLUDING UNITS WITH VAPOR BARRIER DAMAGE AND MOISTURE SATURATED UNITS.

B. PROTECTION: INSULATION INSTALLER SHALL ADVISE CONTRACTOR OF REQUIRED PROTECTION FOR INSULATION WORK DURING REMAINDER OF CONSTRUCTION PERIOD, TO AVOID DAMAGE AND DETERIORATION..

SECTION 15411
WATER DISTRIBUTION PIPING

PART 1 - GENERAL

1.1 DEFINITIONS:

A. WATER DISTRIBUTION PIPE: A PIPE WITHIN THE BUILDING OR ON THE PREMISES THAT CONVEYS WATER FROM THE WATER SERVICE PIPE OR METER TO THE POINTS OF USAGE.

B. WATER SERVICE PIPE: THE PIPE FROM THE WATER MAIN OR OTHER SOURCE OF POTABLE WATER SUPPLY TO THE WATER DISTRIBUTING SYSTEM OF THE BUILDING SERVED.

C. PIPE SIZES USED IN THIS SPECIFICATION ARE NOMINAL PIPE SIZE. (NPS).

1.2 QUALITY ASSURANCE:

A. REGULATORY REQUIREMENTS: COMPLY WITH THE PROVISIONS OF THE FOLLOWING CODES:

1. ASME B31.9 BUILDING SERVICES PIPING FOR MATERIALS, PRODUCTS, AND INSTALLATION. SAFETY VALVES AND PRESSURE VESSELS SHALL BEAR THE APPROPRIATE ASME LABEL.

1.3 DELIVERY, STORAGE, AND HANDLING:

A. STORE PIPE IN A MANNER TO PREVENT SAGGING AND BENDING.

PART 2 - PRODUCTS

2.1 PIPE AND TUBE MATERIALS, GENERAL:

A. PIPE AND TUBE: REFER TO PART 3, ARTICLE_APPLICATION, GENERAL_FOR IDENTIFICATION OF SYSTEMS WHERE THE BELOW MATERIALS ARE USED.

B. COPPER TUBE: ASTM B 88, TYPE L WATER TUBE, DRAWN TEMPER.

2.2 FITTINGS:

A. WROUGHT COPPER SOLDER-JOINT FITTINGS: ANSI B16.22, STREAMLINED PATTERN.

B. WROUGHT COPPER AND BRONZE GROOVED-END FITTINGS: ASTM B 75 TUBE AND ASTM B 584 BRONZE CASTINGS.

C. UNIONS: ASME B16.39, MALLEABLE IRON, CLASS 150, HEXAGONAL STOCK, WITH BALL-AND-SOCKET JOINTS, METAL-TO-METAL BRONZE SEATING SURFACES, FEMALE THREADED ENDS. THREADS SHALL CONFORM TO ASME B1.20.1.

D. DIELECTRIC UNIONS: THREADED, SOLDER, OR GROOVED-END CONNECTIONS AS REQUIRED TO SUIT APPLICATION; CONSTRUCTED TO ISOLATE DISSIMILAR METALS, PREVENT GALVANIC ACTION, AND PREVENT CORROSION.

E. FLEXIBLE CONNECTORS: STAINLESS-STEEL BELLOWS WITH WOVEN, FLEXIBLE, BRONZE WIRE REINFORCED PROTECTIVE JACKET; MINIMUM 150 PSIG WORKING PRESSURE, MAXIMUM 250 DEG F OPERATING TEMPERATURE. CONNECTORS SHALL HAVE FLANGED THREADED-END CONNECTIONS TO MATCH EQUIPMENT CONNECTED AND SHALL BE CAPABLE OF 3/4"-INCH MISALIGNMENT.

2.3 JOINING MATERIALS:

A. SOLDER FILLER METAL: ASTM B 32, 95-5 TIN-ANTIMONY

PART 3 - EXECUTION

3.1 EXAMINATION:

A. EXAMINE ROUGH-IN REQUIREMENTS FOR PLUMBING FIXTURES AND OTHER EQUIPMENT WITH WATER CONNECTIONS TO VERIFY ACTUAL LOCATIONS OF PIPING CONNECTIONS PRIOR TO INSTALLATION.

3.2 PIPE APPLICATIONS:

A. INSTALL TYPE L, DRAWN COPPER TUBE WITH WROUGHT COPPER FITTINGS AND SOLDER JOINTS FOR PIPE SIZES 4 INCHES AND SMALLER, ABOVE GROUND, WITHIN BUILDING.

3.3 PIPING INSTALLATION:

A. GENERAL LOCATIONS AND ARRANGEMENTS: DRAWINGS (PLANS, SCHEMATICS, AND DIAGRAMS INDICATE THE GENERAL LOCATION AND ARRANGEMENT OF THE PIPING SYSTEMS. LOCATION AND ARRANGEMENT OF PIPING LAYOUT TAKE INTO CONSIDERATION PIPE SIZING AND FRICTION LOSS, EXPANSION, PUMP SIZING, AND OTHER DESIGN CONSIDERATIONS. SO FAR AS PRACTICAL, INSTALL PIPING AS INDICATED.

B. USE FITTING FOR ALL CHANGES IN DIRECTION AND BRANCH CONNECTIONS.

C. INSTALL EXPOSED PIPING AT RIGHT ANGLES OR PARALLEL TO BUILDING WALLS. DIAGONAL RUNS ARE NOT PERMITTED UNLESS EXPRESSLY INDICATED.

D. INSTALL PIPING FREE OF SAGS OR BENDS AND WITH AMPLE SPACE BETWEEN PIPING TO PERMIT PROPER INSULATION APPLICATIONS.

E. CONCEAL ALL PIPE INSTALLATIONS IN WALLS, PIPE CHASES, UTILITY SPACES, ABOVE CEILINGS BELOW GRADE OR FLOORS, UNLESS INDICATED TO BE EXPOSED TO VIEW.

F. INSTALL PIPING TIGHT TO SLABS, BEAMS, JOISTS, COLUMNS, WALLS, AND OTHER PERMANENT ELEMENTS OF THE BUILDING. PROVIDE SPACE TO PERMIT INSULATION APPLICATIONS, WITH 1-INCH CLEARANCE OUTSIDE THE INSULATION. ALLOW SUFFICIENT SPACE ABOVE REMOVABLE CEILING PANELS TO ALLOW FOR PANEL REMOVAL.

G. LOCATE GROUPS OF PIPES PARALLEL TO EACH OTHER, SPACED TO PERMIT APPLYING FULL INSULATION AND SERVICING OF VALVES.

H. INSTALL DRAINS AT LOW POINTS IN MAINS, RISERS, AND BRANCH LINES CONSISTING OF A TEE FITTING, 3/4-INCH BALL VALVE, AND SHORT 3/4-INCH THREADED NIPPLE AND CAP.

I FIRE BARRIER PENETRATIONS: WHERE PIPES PASS THOUGH FIRE-RATED WALLS, PARTITIONS, CEILINGS, AND FLOORS, MAINTAIN THE FIRE-RATED INTEGRITY. REFER TO DIVISION 7 FOR SPECIAL SEALERS AND MATERIALS.

J. INSTALL PIPING WITH 1/32-INCH-PER-FOOT (1/4 PERCENT) DOWNWARD SLOPE TOWARDS DRAIN POINT.

3.7 INSTALLATION OF VALVES:

A. SHUTOFF VALVES: INSTALL SHUTOFF VALVES ON INLET OF EACH PLUMBING EQUIPMENT ITEM, ON EACH SUPPLY TO EACH PLUMBING FIXTURE, AND ELSEWHERE AS INDICATED. FOR SHUTOFF VALVES 2 INCHES AND SMALLER, USE BALL VALVES; FOR SHUTOFF VALVES 2 1/2 INCHES AND LARGER, USE GATE OR BUTTERFLY VALVES.

B. DRAIN VALVES: INSTALL DRAIN VALVES ON EACH PLUMBING EQUIPMENT ITEM, LOCATED TO DRAIN EQUIPMENT COMPLETELY FOR SERVICE TO REPAIR. INSTALL DRAIN VALVES AT THE BASE OF EACH RISER, AT LOW POINTS OF HORIZONTAL RUNS, AND ELSEWHERE AS REQUIRED TO DRAIN DISTRIBUTION PIPING SYSTEM COMPLETELY. FOR DRAIN VALVES 2 INCHES AND SMALLER, USE BALL VALVES; FOR DRAIN VALVES 2 1/2 INCHES AND LARGER, USE GATE OR BUTTERFLY VALVES.

3.9 EQUIPMENT CONNECTIONS:

A. PIPING RUN-OUTS TO FIXTURES: PROVIDE HOT AND COLD WATER PIPING RUN-OUTS TO FIXTURES OF SIZES INDICATED, BUT IN NO CASE SMALLER THAN REQUIRED BY PLUMBING CODE..

B. MECHANICAL EQUIPMENT CONNECTIONS: CONNECT HOT AND COLD WATER PIPING SYSTEM TO MECHANICAL EQUIPMENT AS INDICATED. PROVIDE SHUTOFF VALVE AND UNION FOR EACH CONNECTION; PROVIDE DRAIN VALVE ON DRAIN CONNECTION. FOR CONNECTIONS 2 1/2 INCHES AND LARGER, USE FLANGES INSTEAD OF UNIONS.

3.11 FIELD QUALITY CONTROL:

A. INSPECTIONS: INSPECT WATER DISTRIBUTION PIPING AS FOLLOWS:

1. DO NOT ENCLOSE, COVER, OR PUT INTO OPERATION WATER DISTRIBUTION PIPING SYSTEM UNTIL IT HAS BEEN INSPECTED AND APPROVED BY THE AUTHORITY HAVING JURISDICTION.
2. DURING THE PROGRESS OF THE INSTALLATION, NOTIFY THE PLUMBING OFFICIAL HAVING JURISDICTION AT LEAST 24 HOURS PRIOR TO THE TIME SUCH INSPECTION MUST BE MADE. PERFORM TESTS SPECIFIED BELOW IN THE PRESENCE OF THE PLUMBING OFFICIAL.
   - ROUGH-IN INSPECTION: ARRANGE FOR INSPECTION OF THE PIPING SYSTEM BEFORE CONCEALED OR CLOSED IN AFTER SYSTEM IS ROUGHED IN AND PRIOR TO SETTING FIXTURES.
   - FINAL INSPECTION: ARRANGE FOR A FINAL INSPECTION BY THE PLUMBING OFFICIAL TO OBSERVE THE TESTS SPECIFIED BELOW AND TO ENSURE COMPLIANCE WITH THE REQUIREMENTS OF THE PLUMBING CODE.
3. RE-INSPECTIONS: WHENEVER THE PLUMBING OFFICIAL FINDS THAT THE PIPING SYSTEM WILL NOT PASS THE TEST OR INSPECTION, MADE THE REQUIRED CORRECTIONS AND ARRANGE FOR RE-INSPECTION BY THE PLUMBING OFFICIAL.
4. REPORTS: PREPARE INSPECTION REPORTS SIGNED BY THE PLUMBING OFFICIAL.

B. TEST WATER DISTRIBUTION PIPING AS FOLLOWS:

1. TEST FOR LEAKS AND DEFECTS ALL NEW WATER DISTRIBUTION PIPING SYSTEMS AND PARTS OF EXISTING SYSTEMS THAT HAVE BEEN ALTERED, EXTENDED OR REPAIRED. IF TESTING IS PERFORMED IN SEGMENTS, SUBMIT A SEPARATE REPORT FOR EACH TEST, COMPLETE WITH A DIAGRAM OF THE PORTION OF THE SYSTEM TESTED.
2. LEAVE UNCOVERED AND UNCONCEALED ALL NEW, ALTERED, EXTENDED, OR REPLACED WATER DISTRIBUTION PIPING UNTIL IT HAS BEEN TESTED AND APPROVED. EXPOSE ALL SUCH WORK FOR TESTING THAT HAS BEEN COVERED OR CONCEALED BEFORE IT HAS BEEN TESTED AND APPROVED.
3. CAP AND= SUBJECT THE PIPING SYSTEM TO A STATIC WATER PRESSURE OF 50 PSIG ABOVE THE OPERATING PRESSURE WITHOUT EXCEEDING THE PRESSURE RATING OF THE PIPING SYSTEM MATERIALS. ISOLATE THE TEST SOURCE AND ALLOW TO STAND FOR 4 HOURS. LEAKS AND LOSS IN TEST PRESSURE CONSTITUTE DEFECTS THAT MUST BE REPAIRED.
4. REPAIR ALL LEAKS AND DEFECTS WITH NEW MATERIALS AND RETEST SYSTEM OR PORTION THEREOF UNTIL SATISFACTORY RESULTS ARE OBTAINED.
5. PREPARE REPORTS FOR ALL TESTS AND REQUIRED CORRECTIVE ACTION.

3.12 ADJUSTING AND CLEANING:

A. CLEAN AND DISINFECT WATER DISTRIBUTION PIPING AS FOLLOWS:

1. PURGE ALL NEW WATER DISTRIBUTION PIPING SYSTEMS AND PARTS OF EXISTING SYSTEMS THAT HAVE BEEN ALTERED, EXTENDED, OR REPAIRED PRIOR TO USE.
2. USE THE PURGING AND DISINFECTING PROCEDURE PROSCRIBED BY THE AUTHORITY HAVING JURISDICTION OR, IN CASE A METHOD IS NOT PRESCRIBED BY THAT AUTHORITY, THE PROCEDURE DESCRIBED IN EITHER AWWA C651, OR AWWA C652, OR AS DESCRIBED BELOW:
   - FLUSH THE PIPING SYSTEM WITH CLEAN, POTABLE WATER UNTIL DIRTY WATER DOES NOT APPEAR AT THE POINTS OF OUTLET.
   - FILL THE SYSTEM OR PART THEREOF WITH A WATER/CHLORINE SOLUTION CONTAINING AT LEAST 50 PARTS PER MILLION OF CHLORINE. ISOLATE (VALVE OFF) THE SYSTEM OR PART THEREOF AND ALLOW TO STAND FOR 24 HOURS.
   - DRAIN THE SYSTEM OR PART THEREOF OF THE PREVIOUS SOLUTION AND REFILL WITH A WATER/CHLORINE SOLUTION CONTAINING AT LEAST 200 PARTS PER MILLION OF CHLORINE AND ISOLATE AND ALLOW TO STAND FOR 3 HOURS.
   - FOLLOWING THE ALLOWED STANDING TIME, FLUSH THE SYSTEM WITH CLEAN, POTABLE WATER UNTIL CHLORINE DOES NOT REMAIN IN THE WATER COMING FROM THE SYSTEM.
   - SUBMIT WATER SAMPLES IN STERILE BOTTLES TO THE AUTHORITY HAVING JURISDICTION. REPORT THE PROCEDURE IF THE BIOLOGICAL EXAMINATION MADE BY THE AUTHORITY SOWS EVIDENCE OF CONTAMINATION.

B. PREPARE REPORTS FOR ALL PURGING AND DISINFECTING ACTIVITIES.

3.13 COMMISSIONING:

A. FILL THE SYSTEM. CHECK COMPRESSION TANKS TO DETERMINE THAT THEY ARE NOT AIR BOUND AND THAT THE SYSTEM IS COMPLETELY FULL OF WATER.

B. BEFORE OPERATING THE SYSTEM, PERFORM THESE STEPS:

1. CLOSE DRAIN VALVE, HYDRANTS, AND HOSE BIBBS.
2. OPEN VALVES TO FULL OPEN POSITION.
3. REMOVE THE CLEAN STRAINERS.
4. CHECK PUMPS FOR PROPER DIRECTION OF ROTATION. CORRECT IMPROPER WIRING.
5. LUBRICATE PUMP MOTORS AND BEARINGS.

SECTION 15420
DRAINAGE AND VENT SYSTEMS

PART 1 - GENERAL

1.1 QUALITY ASSURANCE:

A. REGULATORY REQUIREMENTS: COMPLY WITH THE PROVISIONS OF THE FOLLOWING:

1. NATIONAL STANDARD PLUMBING CODE.

1.2 SEQUENCING AND SCHEDULING:

A. COORDINATE FLASHING MATERIALS INSTALLATION OF ROOFING, WATERPROOFING, AND ADJOINING SUBSTRATE WORK.

B. COORDINATE THE INSTALLATION OF DRAINS IN POURED-IN-PLACE CONCRETE SLABS, TO INCLUDE PROPER DRAIN ELEVATIONS, INSTALLATION OF FLASHING, AND SLOPE OF SLAB TO DRAINS.

C. COORDINATE WITH INSTALLATION OF SANITARY AND STORM SEWER SYSTEMS AS NECESSARY TO INTERFERENCE BUILDING DRAINS WITH DRAINAGE PIPING SYSTEMS.

PART 2 - PRODUCTS

2.1 ABOVE GROUND DRAINAGE AND VENT PIPING AND FITTINGS:

A. HUBLESS CAST-IRON SOIL PIPE: CISPI STANDARD 301, SERVICE WEIGHT, CAST-IRON SOIL PIPE AND FITTINGS, WITH NEOPRENE GASKETS CONFORMING TO CISPI STANDARD 310..

2.2 DRAINAGE PIPING SPECIALITIES:

A. CLEANOUT PLUGS: CAST-BRONZE OR BRASS, THREADS COMPLYIING WITH ANSI B2.1, COUNTERSUNK HEAD.

B. FLOOR CLEANOUTS: CAST-IRON BODY AND FRAME, WITH CLEANOUT PLUG AND ADJUSTABLE ROUND TOP AS FOLLOWS:

1. NICKEL-BRONZE TOP: MANUFACTURER'S STANDARD CAST UNIT TO RECEIVE FLOOR MATERIAL AS SPECIFIED IN THE CONTACT DOCUMENTS.

C. WALL CLEANOUTS: CAST-IRON BODY ADAPTABLE TO PIPE WITH CAST-BRONZE OR BRASS CLEANOUT PLUG; STAINLESS STEEL COVER INCLUDING SCREWS.

D. VENT FLASHING SLEEVES: CAST-IRON CALKING TYPE ROOF COUPLING FOR CAST-IRON STACKS, CAST-IRON THREADED TYPE ROOF COUPLING FOR STEEL STACKS, AND CAST-BRONZE STACK FLASHING SLEEVE FOR COPPER TUBING.

E. FROST-PROOF VENT CAPS: CONSTRUCT OF GALVANIZED IRON, COPPER, OR LEAD-COATED COPPER, SIZED TO PROVIDE 1 INCH AIR SPACE BETWEEN OUTSIDE OF VENT PIPE AND INSIDE OF FLASHING COLLAR EXTENSION.

2.3 FLOOR DRAINS AND GRATES:

A. FLOOR DRAIN TYPE DESIGNATIONS AND SIZES ARE INDICATED ON DRAWINGS.

PART 3 - EXECUTION

3.1 EXAMINATION:

A. VERIFY EXISTING GRADES, INVERTS, UTILITIES, OBSTACLES, AND TOPOGRAPHICAL CONDITIONS PRIOR TO INSTALLATIONS.

B. EXAMINE ROUGH-IN REQUIREMENTS FOR PLUMBING FIXTURES AND OTHER EQUIPMENT HAVING DRAIN CONNECTIONS TO VERIFY ACTUAL LOCATIONS OF PIPING CONNECTIONS PRIOR TO INSTALLATION.

C. EXAMINE WALLS, FLOOR, ROOF, AND PLUMBING CHASES FOR SUITABLE CONDITIONS WHERE PIPING AND SPECIALTIES ARE TO BE INSTALLED.

D. DO NOT PROCEED UNTIL UNSATISFACTORY CONDITIONS HAVE BEEN CORRECTED.

3.2 PIPE APPLICATIONS - ABOVE GROUND, WITHIN BUILDING:

A. INSTALL HUBLESS CAST IRON PIPING..

3.3 INSTALLATION:

A. GENERAL LOCATIONS AND ARRANGEMENTS: DRAWINGS (PLANS, SCHEMATICS, AND DIAGRAMS) INDICATE THE GENERAL LOCATION AND ARRANGEMENT OF THE PIPING SYSTEMS. LOCATION AND ARRANGEMENT OF PIPING LAYOUT TAKE INTO ACCOUNT MANY DESIGN CONSIDERATIONS. SO FAR AS PRACTICAL, INSTALL PIPING AS INDICATED.

B. USE FITTINGS FOR ALL CHANGES IN DIRECTION AND ALL BRANCH CONNECTIONS.

C. INSTALL EXPOSED PIPING AT RIGHT ANGLES OR PARALLEL TO BUILDING WALLS. DIAGONAL RUNS ARE NOT PERMITTED, UNLESS EXPRESSLY INDICATED.

D. INSTALL PIPING FREE OF SAGS OR BENDS AND WITH AMPLE SPACE BETWEEN PIPING TO PERMIT PROPER INSULATION APPLICATIONS.

E. CONCEAL ALL PIPE INSTALLATIONS IN WALLS, PIPE CHASES, UTILITY SPACES, ABOVE CEILINGS, BELOW GRADE OR FLOORS, UNLESS INDICATED TO BE EXPOSED TO VIEW.

F. INSTALL PIPING TIGHT TO SLABS, BEAMS, JOISTS, COLUMNS, WALLS, AND OTHER PERMANENT ELEMENTS OF THE BUILDING. ALLOW SUFFICIENT SPACE ABOVE REMOVABLE CEILING PANELS TO ALLOW FOR PANEL REMOVAL.

G. FIRE BARRIER PENETRATIONS: WHERE PIPES PASS THROUGH FIRE RATED WALLS, PARTITIONS, CEILINGS AND FLOORS, MAINTAIN THE RATED INTEGRITY. REFER TO DIVISION 7 FOR SPECIAL SEALERS AND MATERIALS.

H. MAKE CHANGES IN DIRECTION FOR DRAINAGE AND VENT PIPING USING APPROPRIATE 45 DEGREE WYES, HALF-WYES, OR LONG SWEEP QUARTER, SIXTH, EIGHTH, OR SIXTEENTH BENDS. SANITARY TEES OR SHORT QUARTER BENDS MAY BE USED ON VERTICAL STACKS OF DRAINAGE LINES WHERE THE CHANGE IN DIRECTION OF FLOW IS FROM HORIZONTAL TO VERTICAL, EXCEPT USE LONG-TURN TEES WHERE TWO FIXTURES ARE INSTALLED BACK TO BACK AND HAVE A COMMON DRAIN. STRAIGHT TEES, ELBOWS, AND CROSSES MAY BE USED ON VENT LINES. NO CHANGE IN DIRECTION OF FLOW GRATER THAN 90 DEGREES SHALL BE MADE. WHERE DIFFERENT SIZES OF DRAINAGE PIPES AND FITTINGS ARE CONNECTED, USE PROPER SIZE, STANDARD INCREASERS AND REDUCERS. REDUCTION OF THE SIZE OF DRAINAGE PIPING IN THE DIRECTION OF FLOW IS PROHIBITED.

I. INSTALL BUILDING DRAIN PITCHED DOWN AT MINIMUM SLOPE OF 1/4 INCH PER FOOT (2 PERCENT) FOR PIPING 3 INCH AND SMALLER, AND 1/8 INCH PER FOOT (1 PERCENT) FOR PIPING 4 INCH AND LARGER.

3.4 INSTALLATIONS OF PIPING SPECIALTIES:

A. ABOVE GROUND CLEANOUTS: INSTALL IN ABOVE GROUND PIPING AND BUILDING DRAIN PIPING AS INDICATED, AND:

1. AS REQUIRED BY PLUMBING CODE;
2. AT EACH CHANGE IN DIRECTION OF PIPING GREATER THAN 45 DEGREES;
3. AT MINIMUM INTERVALS OF 50' FOR PIPING 4" AND SMALLER AND 100; FOR LARGER PIPING;
4. AT BASE OF EACH VERTICAL SOIL OR WASTE STACK.

B. CLEANOUTS COVERS: INSTALL FLOOR AND WALL CLEANOUT COVERS FOR CONCEALED PIPING, TYPES AS INDICATED.

C. FLASHING FLANGES: INSTALL FLASHING FLANGE AND CLAMPING DEVICE WITH EACH STACK AND CLEANOUT PASSING THROUGH WATERPROOF MEMBRANES.

D. VENT FLASHING SLEEVES: INSTALL ON STACKS PASSING THROUGH ROOF, SECURE OVER STACK FLASHING IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS.

E. FROST-PROOF VENT CAPS; INSTALL FROST-PROOF VENT CAPS ON EACH VENT PIPE PASSING THROUGH ROOF. MAINTAIN 1 INCH CLEARANCE BETWEEN VENT PIPE AND ROOF STRUCTURE.

3.5 CONNECTIONS:

A. PIPING RUNOUTS TO FIXTURES: PROVIDE DRAINAGE AND VENT PIPING RUNOUTS TO PLUMBING FIXTURES AND DRAINS, WITH APPROVED TRAP, OF SIZES INDICATED; BUT IN NO CASE SMALLER THAN REQUIRED BY THE PLUMBING CODE.

3.6 FIELD QUALITY CONTROL:

A. INSPECTIONS

1. DO NOT ENCLOSE, COVER, OR PUT INTO OPERATION DRAINAGE AND VENT PIPING SYSTEM UNTIL IT HAS BEEN INSPECTED AND APPROVED BY THE AUTHORITY HAVING JURISDICTION.
2. DURING THE PROGRESS OF THE INSTALLATION, NOTIFY THE PLUMBING OFFICIAL HAVING JURISDICTION, AT LEAST 24 HOURS PRIOR TO THE TIME SUCH INSPECTION MUST BE MADE. PERFORM TESTS SPECIFIED BELOW IN THE PRESENCE OF THE PLUMBING OFFICIAL.
   - ROUGH-IN INSPECTION: ARRANGE FOR INSPECTION OF THE PIPING SYSTEM BEFORE CONCEALED OR CLOSED-IN AFTER SYSTEM IS ROUGHED-IN, AND PRIOR TO SETTING FIXTURES.
   - FINAL INSPECTION: ARRANGE FOR A FINAL INSPECTION BY THE PLUMBING OFFICIAL TO OBSERVE THE TESTS SPECIFIED BELOW AND TO INSURE COMPLIANCE WITH THE REQUIREMENTS OF THE PLUMBING CODE.
3. RE-INSPECTIONS: WHENEVER THE PIPING SYSTEM FAILS TO PASS THE TEST OR INSPECTION, MAKE THE REQUIRED CORRECTIONS, AND ARRANGE FOR RE-INSPECTED BY THE PLUMBING OFFICIAL.
4. REPORTS: PREPARE INSPECTION REPORTS, SIGNED BY THE PLUMBING OFFICIAL.

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12/13/2023 - REVIEW/COORDINATION
12/30/2023 - BIDDING
1/15/2024 - PERMITS
4/23/2024 - REDESIGN FOR REVIEW/ COORDINATION
4/26/2024 - REVISION 1 REVISED FOR RE-BID

NJ PROFESSIONAL ENGINEER No. 24GE03895900
PA PROFESSIONAL ENGINEER No. PE075142
DE PROFESSIONAL ENGINEER No. 17464
NY PROFESSIONAL ENGINEER No. 088381
MD PROFESSIONAL ENGINEER No. 36281
CT PROFESSIONAL ENGINEER No. 0031563
FL PROFESSIONAL ENGINEER No. 71354
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MECHANICAL/ELECTRICAL SPECIFICATIONS
FOR
FAIRFIELD TOWNSHIP SENIOR CENTER RENOVATIONS AND ADA IMPROVEMENTS
SITUATED AT
68 FAIRTON-GOULDTOWN RD.
BRIDGETON, NJ 08302

SCALE:	AS NOTED
DATE:	1/15/2024
DRAWN BY:	KJG
CHECKED BY:	DJF
APPROVED BY:	DAL SR

DWG NO.
M/E2

B. PIPING SYSTEM TEST TEST DRAINAGE AND VENT SYSTEM IN ACCORDANCE WITH THE PROCEDURES OF THE AUTHORITY HAVING JURISDICTION, OR IN THE ABSENCE OF A PUBLISHED PROCEDURE, AS FOLLOWS:

1. TEST FOR LEAKS AND DEFECTS ALL NEW DRAINAGE AND VENT PIPING SYSTEMS AND PARTS OF EXISTING SYSTEMS, WHICH HAVE BEEN ALTERED, EXTENDED OR REPAIRED. IF TESTING IS PERFORMED IN SEGMENTS, SUBMIT A SEPARATE REPORT FOR EACH TEST, COMPLETE WITH A DIAGRAM OF THE PORTION OF THE SYSTEM TESTED.

2. LEAVE UNCOVERED AND UNCONCEALED ALL NEW, ALTERED, EXTENDED, OR REPLACED DRAINAGE AND VENT PIPING UNTIL IT HAS BEEN TESTED AND APPROVED. EXPOSE ALL SUCH WORK FOR TESTING, THAT HAS BEEN COVERED OR CONCEALED BEFORE IT HAS BEEN TESTED OR APPROVED.

3. ROUGH PLUMBING TEST PROCEDURE: EXCEPT FOR OUTSIDE LEADERS AND PERFORATED OR OPEN JOINTED DRAIN TILE, TEST THE PIPING OF PLUMBING DRAINAGE AND VENTING SYSTEMS UPON COMPLETION OF THE ROUGH PIPING INSTALLATION. TIGHTLY CLOSE ALL OPENINGS IN THE PIPING SYSTEM, AND FILL WITH WATER TO THE POINT OF OVERFLOW, BUT NOT LESS THAN 10 FEET HEAD OF WATER. WATER LEVEL SHALL NOT DROP DURING THE PERIOD FROM 15 MINUTES BEFORE THE INSPECTION STARTS, TROUGH COMPLETION OF THE INSPECTION. INSPECT ALL JOINTS FOR LEAKS.

4. FINISHED PLUMBING TEST PROCEDURE: AFTER THE PLUMBING FIXTURES HAVE BEEN SET AND THEIR TRAPS FILLED WITH WATER, THEIR CONNECTIONS SHALL BE TESTED AND PROVED GAS AND WATER-TIGHT. PLUG THE STACK OPENINGS ON THE ROOF AND BUILDING DRAIN WHERE IT LEAVES THE BUILDING, AND INTRODUCE AIR INTO THE SYSTEM EQUAL TO A PRESSURE OF 1" WATER COLUMN. USE A "U" TUBE OR MANOMETER INSERTED IN THE TRAP OF A WATER CLOSET TO MEASURE THIS PRESSURE. AIR PRESSURE SHALL REMAIN CONSTANT WITHOUT THE INTRODUCTION OF ADDITIONAL AIR THROUGHOUT THE PERIOD OF INSPECTION. INSPECT ALL PLUMBING FIXTURE CONNECTIONS FOR GAS AND WATER LEAKS.

5. REPAIR ALL LEAKS AND DEFECTS USING NEW MATERIALS RETEST SYSTEM OR PORTION THEREOF UNTIL SATISFACTORY RESULTS ARE OBTAINED.

6. PREPARE REPORTS FOR ALL TESTS AND REQUIRED CORRECTIVE ACTION.

3.7 ADJUSTING AND CLEANING:

A. CLEAN INTERIOR OF PIPING SYSTEM. REMOVE DIRT AND DEBRIS AS WORK PROGRESSES.

B. CLEAN DRAIN STRAINERS, DOMES, AND TRAPS. REMOVE DIRT AND DEBRIS.

3.5 VALVE INSTALLATION

A. PIPING SYSTEMS SHALL BE SUPPLIED WITH VALVES AT POINTS SHOWN ON THE DRAWINGS OR HEREIN SPECIFIED, ARRANGED SO AS TO GIVE SHUT-OFF AND REGULATING CONTROL OF PIPING SYSTEMS THROUGHOUT THE BUILDING.

B. VALVES SHALL BE THE FULL SIZE OF THE LINE IN WHICH THEY ARE INSTALLED.

C. VALVES SHALL BE INSTALLED IN NEAT ARRANGEMENTS WITH ACCESSIBILITY FOR MAINTENANCE. NO VALVE SHALL BE INSTALLED WITH ITS STEM POINTING DOWN. GLOBE VALVES MAY BE INSTALLED WITH STEMS HORIZONTAL, BUT THE PREFERRED POSITION IS VERTICAL. ALL GLOBE AND ANGLE VALVES SHALL BE INSTALLED TO CLOSE AGAINST PRESSURE.

3.6 PIPE SLEEVES

A. ON EXISTING CONCRETE CONSTRUCTION, HOLES FOR NEW PIPING SHALL BE MADE WITH POWER-DRIVEN CIRCULAR CUTTERS. NO PIPE SLEEVES ARE REQUIRED.

B. ON NEW CONCRETE CONSTRUCTION, PROVIDE PIPE SLEEVES WHERE PIPING PASSES THROUGH CONCRETE FLOORS, WALLS, OR CEILINGS. EXTEND SLEEVE FOR THE FULL THICKNESS OF THE CONCRETE WITH 1/2-INCH CLEARANCE AROUND PIPE FOR INSULATION.

C. ON PIPE PENETRATIONS BELOW GRADE, CAULK SPACE BETWEEN PIPES AND PIPE SLEEVES WITH OAKUM AND MASTIC, AND MAKE WATERTIGHT.

D. ON OTHER FLOOR AND WALL LOCATIONS, SECURE SLEEVES TO FORMS SO THEY WILL NOT BECOME DISPLACED DURING POURING OF CONCRETE. FILL METAL OR FIBER SLEEVES ON DECKS WITH SAND. REMOVE SLEEVES FROM OPENINGS AFTER REMOVAL OF FORMS. CUT-IN PROPER SIZED HOLES IN CONCRETE TO REPLACE SLEEVES CRUSHED OR KNOCKED OUT OF POSITION DURING POURING OF CONCRETE. CAULK SPACE AROUND PIPE WITH MASTIC AND OAKUM.

3.7 SEISMIC RESTRAINTS

A. DUCTWORK, PIPING, AND MECHANICAL EQUIPMENT, WITH OR WITHOUT VIBRATION ISOLATION, SHALL BE PROVIDED WITH SEISMIC RESTRAINTS.

SECTION 15891
METAL DUCTWORK

PART 1 - GENERAL

1.1 DEFINITIONS:

A. SEALING REQUIREMENTS DEFINITIONS: FOR THE PURPOSES OF DUCT SYSTEMS SEALING REQUIREMENTS SPECIFIED IN THIS SECTION, THE FOLLOWING DEFINITIONS APPLY:

1. SEAMS: A SEAM IS DEFINED AS JOINING OF TWO LONGITUDINALLY (IN THE DIRECTION OF AIRFLOW) ORIENTED EDGES OF DUCT SURFACE MATERIAL OCCURRING BETWEEN TWO JOINTS. ALL OTHER DUCT SURFACE CONNECTIONS MADE ON THE PERIMETER ARE DEEMED TO BE JOINTS.

2. JOINTS: JOINTS INCLUDE GIRTH JOINTS; BRANCH AND SUB-BRANCH INTERSECTIONS; SO CALLED DUCT COLLAR TAP-INS; FITTING SUBSECTIONS; LOUVER AND AIR TERMINAL CONNECTIONS TO DUCTS; ACCESS DOOR AND ACCESS PANEL FRAMES AND JAMBS; DUCT, PLENUM, AND CASING ABUTMENTS TO BUILDING STRUCTURES.

1.2 SYSTEM PERFORMANCE REQUIREMENTS:

A. THE DUCT SYSTEM DESIGN, AS INDICATED, HAS BEEN USED TO SELECT AND SIZE AIR MOVING AND DISTRIBUTION EQUIPMENT AND OTHER COMPONENTS OF THE AIR SYSTEM. CHANGES OR ALTERATIONS TO THE LAYOUT OR CONFIGURATION OF THE DUCT SYSTEM MUST BE SPECIFICALLY APPROVED IN WRITING. ACCOMPANY REQUESTS FOR LAYOUT MODIFICATIONS WITH CALCULATIONS SHOWING THAT THE PROPOSED LAYOUT WILL PROVIDE THE ORIGINAL DESIGN RESULTS WITHOUT INCREASING THE SYSTEM TOTAL PRESSURE.

1.3 QUALITY ASSURANCE:

A. NFPA COMPLIANCE: COMPLY WITH THE FOLLOWING NFPA STANDARDS:

1. NFPA 90A, "STANDARD FOR THE INSTALLATION OF AIR CONDITIONING AND VENTILATING SYSTEMS," EXCEPT AS INDICATED OTHERWISE.

PART 2 - PRODUCTS

2.1 SHEET METAL MATERIALS:

A. SHEET METAL, GENERAL: PROVIDE SHEET METAL IN THICKNESSES INDICATED, PACKAGED AND MARKED AS SPECIFIED IN ASTM A 700.

B. REINFORCEMENT SHAPES AND PLATES: UNLESS OTHERWISE INDICATED, PROVIDE GALVANIZED STEEL REINFORCING WHERE INSTALLED ON GALVANIZED SHEET METAL DUCTS. FOR ALUMINUM AND STAINLESS STEEL DUCTS PROVIDE REINFORCING OR COMPATIBLE MATERIALS.

C. TIE RODS: GALVANIZED STEEL, 1/4-INCH MINIMUM DIAMETER FOR 36-INCH LENGTH OR LESS; 3/8-INCH MINIMUM DIAMETER FOR LENGTHS LONGER THAN 36 INCHES.

2.2 SEALING MATERIALS:

A. SHEET METAL, GENERAL: PROVIDE SHEET METAL IN THICKNESSES INDICATED, PACKAGED AND MARKED AS SPECIFIED IN ASTM A 700.

B. REINFORCEMENT SHAPES AND PLATES: UNLESS OTHERWISE INDICATED, PROVIDE GALVANIZED STEEL REINFORCING WHERE INSTALLED ON GALVANIZED SHEET METAL DUCTS. FOR ALUMINUM AND STAINLESS STEEL DUCTS PROVIDE REINFORCING OR COMPATIBLE MATERIALS.

C. TIE RODS: GALVANIZED STEEL, 1/4-INCH MINIMUM DIAMETER FOR 36-INCH LENGTH OR LESS; 3/8-INCH MINIMUM DIAMETER FOR LENGTHS LONGER THAN 36 INCHES.

2.3 HANGERS AND SUPPORTS:

A. BUILDING ATTACHMENTS: CONCRETE INSERTS, POWDER ACTUATED FASTENERS, OR STRUCTURAL STEEL FASTENERS APPROPRIATE FOR BUILDING MATERIALS.

B. HANGERS: GALVANIZED SHEET STEEL, OR ROUND, UNCOATED STEEL, THREADED ROD.

1. HANGERS INSTALLED IN CORROSIVE ATMOSPHERES: ELECTRO-GALVANIZED, ALL-THREAD ROD OR HOT-DIPPED-GALVANIZED RODS WITH THREADS PAINTED AFTER INSTALLATION.

2. STRAPS AND ROD SIZES: CONFORM WITH TABLE 4-1 IN SMACNA HVAC DUCT CONSTRUCTION STANDARDS, 1985 EDITION, FOR SHEET STEEL WIDTH AND GAGE AND STEEL ROD DIAMETERS.

C. DUCT ATTACHMENTS: SHEET METAL SCREWS, BLIND RIVETS, OR SELF-TAPPING METAL SCREWS; COMPATIBLE WITH DUCT MATERIALS.

D. TRAPEZE AND RISER SUPPORTS: STEEL SHAPES CONFORMING TO ASTM A 36.

2.4 RECTANGULAR DUCT FABRICATION:

A. GENERAL: EXCEPT AS OTHERWISE INDICATED, FABRICATE RECTANGULAR DUCTS WITH GALVANIZED SHEET STEEL, IN ACCORDANCE WITH SMACNA "HVAC DUCT CONSTRUCTION STANDARDS," TABLES 1-3 THROUGH 1-19, INCLUDING THEIR ASSOCIATED DETAILS. CONFORM TO THE REQUIREMENTS IN THE REFERENCED STANDARD FOR METAL THICKNESS, REINFORCING TYPES AND INTERVALS, TIE ROD APPLICATIONS, AND JOINT TYPES AND INTERVALS.

1. FABRICATE RECTANGULAR DUCTS IN LENGTHS APPROPRIATE TO REINFORCEMENT AND RIGIDITY CLASS REQUIRED FOR PRESSURE CLASSIFICATION.

2. PROVIDE MATERIALS THAT ARE FREE FROM VISUAL IMPERFECTIONS SUCH AS PITTING, SEAM MARKS, ROLLER MARKS, STAINS, AND DISCOLORATIONS.

B. STATIC PRESSURE CLASSIFICATIONS: EXCEPT WHERE OTHERWISE INDICATED, CONSTRUCT DUCT SYSTEMS TO THE FOLLOWING PRESSURE CLASSIFICATIONS:

1. SUPPLY DUCTS: 3 INCHES WATER GAGE.

2. RETURN DUCTS: 2 INCHES WATER GAGE, NEGATIVE PRESSURE.

3. EXHAUST DUCTS: 2 INCHES WATER GAGE, NEGATIVE PRESSURE.

C. CROSSBREAKING OR CROSS BEADING: CROSSBREAK OR BEAD DUCT SIDES THAT ARE 19 INCHES AND LARGER AND ARE 20 GAGE OR LESS, WITH MORE THAN 10 SQ. FT. OF UN-BRACED PANEL AREA, AS INDICATED IN SMACNA "HVAC DUCT CONSTRUCTION STANDARD," FIGURE 1-4, UNLESS THEY ARE LINED OR ARE EXTERNALLY INSULATED.

2.5 RECTANGULAR DUCT FITTINGS:

A. FABRICATE ELBOWS, TRANSITIONS, OFFSETS, BRANCH CONNECTIONS, AND OTHER DUCT CONSTRUCTION IN ACCORDANCE WITH SMACNA "HVAC DUCT CONSTRUCTION STANDARD," 1985 EDITION, FIGURES 2-1 THROUGH 2-10.

PART 3 - EXECUTION

3.1 DUCT INSTALLATION, GENERAL:

A. DUCT SYSTEM PRESSURE CLASS: CONSTRUCT AND INSTALL EACH DUCT SYSTEM FOR THE SPECIFIC DUCT PRESSURE CLASSIFICATION INDICATED.

B. INSTALL DUCTS WITH THE FEWEST POSSIBLE JOINTS.

C. USE FABRICATED FITTINGS FOR ALL CHANGES IN DIRECTIONS, CHANGES IN SIZE AND SHAPE, AND CONNECTIONS.

D. INSTALL COUPLINGS TIGHT TO DUCT WALL SURFACE WITH PROJECTIONS INTO DUCT AT CONNECTIONS KEPT TO A MINIMUM.

E. LOCATE DUCTS, EXCEPT AS OTHERWISE INDICATED, VERTICALLY AND HORIZONTALLY, PARALLEL AND PERPENDICULAR TO BUILDING LINES; AVOID DIAGONAL RUNS. INSTALL DUCT SYSTEMS IN SHORTEST ROUTE THAT DOES NOT OBSTRUCT USEABLE SPACE OR BLOCK ACCESS FOR SERVICING BUILDING AND ITS EQUIPMENT.

F. INSTALL DUCTS CLOSE TO WALLS, OVERHEAD CONSTRUCTION, COLUMNS, AND OTHER STRUCTURAL AND PERMANENT ENCLOSURE ELEMENTS OF BUILDING.

G. INSTALL INSULATED DUCTS WITH 1-INCH CLEARANCE OUTSIDE OF INSULATION.

H. CONCEAL DUCTS FROM VIEW IN FINISHED AND OCCUPIED SPACES BY LOCATING IN MECHANICAL SHAFTS, HOLLOW WALL CONSTRUCTION, OR ABOVE SUSPENDED CEILINGS. DO NOT INCASE HORIZONTAL RUNS IN SOLID PARTITIONS, EXCEPT AS SPECIALLY SHOWN.

I. COORDINATE LAYOUT WITH SUSPENDED CEILING AND LIGHTING LAYOUTS AND SIMILAR FINISHED WORK.

3.2 SEAM AND JOINT SEALING:

A. GENERAL: SEAL DUCT SEAMS AND JOINTS AS FOLLOWS:

1. PRESSURE CLASSIFICATION LESS THAN 2 INCHES WATER GAGE: TRANSVERSE JOINTS ONLY. SEAL EXTERNALLY INSULATED DUCTS PRIOR TO INSULATION INSTALLATION.

3.3 HANGING AND SUPPORTING:

A. INSTALL RIGID ROUND, RECTANGULAR, AND FLAT OVAL METAL DUCT WITH SUPPORT SYSTEMS INDICATED IN SMACNA "HVAC CONSTRUCTION STANDARDS," TABLES 4-1 AND FIGURES 4-1 THROUGH 4-8.

B. SUPPORT HORIZONTAL DUCTS WITHIN 2 FEET OF EACH ELBOW AND WITHIN 4 FEET OF EACH BRANCH INTERSECTION.

C. UPPER ATTACHMENTS TO STRUCTURES SHALL HAVE AN ALLOWABLE LOAD NOT EXCEEDING 1/4 OF THE FAILURE (PROOF TEST) LOAD BUT ARE NOT LIMITED TO THE SPECIFIC METHODS INDICATED.

3.4 CONNECTIONS:

A. BRANCH CONNECTIONS: COMPLY WITH SMACNA "HVAC DUCT CONSTRUCTION STANDARDS," FIGURES 2-7 AND 2-8.

B. OUTLET AND INLET CONNECTIONS: COMPLY WITH SMACNA "HVAC DUCT CONSTRUCTION STANDARDS," FIGURES 2-16 THROUGH 2-18.

3.5 FIELD QUALITY CONTROL:

A. REMAKE LEAKING JOINTS AS REQUIRED AND APPLY SEALANTS TO ACHIEVE SPECIFIED MAXIMUM ALLOWABLE LEAKAGE.

3.6 FIELD QUALITY CONTROL:

A. DISASSEMBLE, REASSEMBLE, AND SEAL SEGMENTS OF THE SYSTEMS AS REQUIRED TO ACCOMMODATE LEAKAGE TESTING, AND AS REQUIRED FOR COMPLIANCE WITH TEST REQUIREMENTS.

B. DETERMINE LEAKAGE FROM ENTIRE SYSTEM OR SECTION OF THE SYSTEM BY RELATING LEAKAGE TO THE SURFACE AREA OF THE TEST SECTION.

C. MAXIMUM ALLOWABLE LEAKAGE: AS DESCRIBED IN LATEST EDITION OF ASHRAE HANDBOOK, "FUNDAMENTALS" VOLUME.

D. REMAKE LEAKING JOINTS AS REQUIRED AND APPLY SEALANTS TO ACHIEVE SPECIFIED MAXIMUM ALLOWABLE LEAKAGE.

3.7 ADJUSTING AND CLEANING:

A. ADJUST VOLUME CONTROL DEVICES AS REQUIRED BY THE TESTING AND BALANCING PROCEDURES TO ACHIEVE REQUIRED AIR FLOW..

B. VACUUM DUCTS SYSTEMS PRIOR TO FINAL ACCEPTANCE TO REMOVE DUST AND DEBRIS.

SECTION 15990
TESTING, ADJUSTING, AND BALANCING

PART 1 - GENERAL

1.1 DEFINITIONS:

A. SYSTEMS TESTING, ADJUSTING, AND BALANCING IS THE PROCESS OF CHECKING AND ADJUSTING ALL THE BUILDING ENVIRONMENTAL SYSTEMS TO PRODUCE THE DESIGN OBJECTIVES. IT INCLUDES:

1. ADJUSTMENT OF TOTAL SYSTEM TO PROVIDE DESIGN QUANTITIES;

B. TEST: TO DETERMINE QUANTITATIVE PERFORMANCE OF EQUIPMENT.

C. ADJUST: TO REGULATE THE SPECIFIED FLUID FLOW RATE AND AIR PATTERNS AT THE TERMINAL EQUIPMENT (E.G., REDUCE FAN SPEED, THROTTLING).

D. BALANCE: TO PROPORTION FLOWS WITHIN THE DISTRIBUTION SYSTEM (SUB-MAINS, BRANCHES, AND TERMINALS) ACCORDING TO SPECIFIED DESIGN QUANTITIES.

E. PROCEDURE: STANDARDIZED APPROACH AND EXECUTION OF SEQUENCE OF WORK OPERATIONS TO YIELD REPRODUCIBLE RESULTS.

F. REPORT FORMS: TEST DATA SHEETS ARRANGED FOR COLLECTING TEST DATA IN LOGICAL ORDER FOR SUBMISSION AND REVIEW. THESE DATA SHOULD ALSO FORM THE PERMANENT RECORD TO BE USED AS THE BASIS FOR FUTURE TESTING, ADJUSTING, AND BALANCING.

G. TERMINAL: THE POINT WHERE THE CONTROLLED FLUID ENTERS OR LEAVES THE DISTRIBUTION SYSTEM. THESE ARE SUPPLY INLETS ON WATER TERMINALS, SUPPLY OUTLETS ON AIR TERMINALS, RETURN OUTLETS ON WATER TERMINALS, AND EXHAUST OR RETURN INLETS ON AIR TERMINALS SUCH AS REGISTERS, GRILLES, DIFFUSERS, LOUVERS, AND HOODS.

H. MAIN: DUCT OR PIPE CONTAINING THE SYSTEM'S MAJOR OR ENTIRE FLUID FLOW.

I. SUB-MAIN: DUCT OR PIPE CONTAINING PART OF THE SYSTEMS' CAPACITY AND SERVING TWO OR MORE BRANCH MAINS.

J. BRANCH MAIN: DUCT OR PIPE SERVING TWO OR MORE TERMINALS.

K. BRANCH: DUCT OR PIPE SERVING A SINGLE TERMINAL.

1.2 QUALITY ASSURANCE:

A. AGENCY QUALIFICATIONS:

1. EMPLOY THE SERVICES OF AN INDEPENDENT TESTING, ADJUSTING, AND BALANCING AGENCY MEETING THE QUALIFICATIONS SPECIFIED BELOW, TO THE THE SINGLE SOURCE OF RESPONSIBILITY TO TEST, ADJUST, AND BALANCE THE BUILDING MECHANICAL SYSTEMS IDENTIFIED ABOVE, TO PRODUCE THE DESIGN OBJECTIVES. SERVICES SHALL INCLUDE CHECKING INSTALLATIONS FOR CONFORMITY TO DESIGN, MEASUREMENT AND ESTABLISHMENT OF THE FLUID QUANTITIES OF THE MECHANICAL SYSTEMS AS REQUIRED TO MEET DESIGN SPECIFICATIONS, AND RECORDING AND REPORTING THE RESULTS.

2. THE INDEPENDENT TESTING, ADJUSTING, AND BALANCING AGENCY CERTIFIED BY NATIONAL ENVIRONMENTAL BALANCING BUREAU (NEBB) IN THOSE TESTING AND BALANCING DISCIPLINES REQUIRED FOR THIS PROJECT, AND HAVING AT LEAST ONE PROFESSIONAL ENGINEER REGISTERED IN THE STATE IN WHICH THE SERVICES AR TO BE PERFORMED, CERTIFIED BY NEBB AS A TEST AND BALANCE ENGINEER.

B. CODES AND STANDARDS:

1. NEBB: "PROCEDURAL STANDARDS FOR TESTING, ADJUSTING, AND BALANCING OF ENVIRONMENTAL SYSTEMS."

2. AABC: "NATIONAL STANDARDS FOR TOTAL SYSTEM BALANCE".

3. ASHRAE: ASHRAE HANDBOOK, 1984 SYSTEMS VOLUME, CHAPTER 37, TESTING, ADJUSTING, AND BALANCING.

1.3 PROJECT CONDITIONS:

A. SYSTEMS OPERATION: SYSTEMS SHALL BE FULLY OPERATIONAL PRIOR TO BEGINNING PROCEDURES.

PART 2 - PARTS (NOT USED)

PART 3 - EXECUTION

3.1 PRELIMINARY PROCEDURES FOR AIR SYSTEM BALANCING:

A. BEFORE OPERATING THE SYSTEM, PERFORM THESE STEPS:

1. OBTAIN DESIGN DRAWINGS AND SPECIFICATIONS AND BECOME THOROUGHLY ACQUAINTED WITH THE DESIGN INTENT.

2. OBTAIN COPIES OF APPROVED SHOP DRAWINGS OF ALL AIR HANDLING EQUIPMENT, OUTLETS (SUPPLY, RETURN, AND EXHAUST) AND TEMPERATURE CONTROL DIAGRAMS.

3. COMPARE DESIGN TO INSTALLED EQUIPMENT AND FIELD INSTALLATIONS.

4. WALK SYSTEM FROM THE SYSTEM AIR HANDLING EQUIPMENT TO TERMINAL UNITS TO DETERMINE VARIATIONS OF INSTALLATION FROM DESIGN.

5. CHECK FILTERS FOR CLEANLINESS.

6. CHECK DAMPERS (BOTH VOLUME AND FIRE) FOR CORRECT AND LOCKED POSITION, AND TEMPERATURE CONTROL FOR COMPLETENESS OF INSTALLATION BEFORE STARTING FANS.

7. PREPARE REPORTS TEST SHEETS FOR BOTH FANS AND OUTLETS. OBTAIN MANUFACTURER'S OUTLET FACTORS AND RECOMMENDED PROCEDURES FOR TESTING. PREPARE A SUMMATION OF REQUIRED OUTLET VOLUMES TO PERMIT A CROSSCHECK WITH REQUIRED FAN VOLUMES.

8. DETERMINE BEST LOCATIONS IN MAIN AND BRANCH DUCTWORK FOR MOST ACCURATE DUCT TRAVERSES.

9. PLACE OUTLET DAMPERS IN THE FULL OPEN POSITION.

10. PREPARE SCHEMATIC DIAGRAMS OF SYSTEM "AS-BUILT" DUCTWORK PIPING LAYOUTS TO FACILITATE REPORTING.

11. LUBRICATE ALL MOTORS AND BEARINGS.

12. CHECK FAN BELT TENSION.

13. CHECK FAN ROTATION.

3.2 MEASUREMENTS:

A. PROVIDE ALL REQUIRED INSTRUMENTATION TO OBTAIN PROPER MEASUREMENTS, CALIBRATED TO THE TOLERANCES SPECIFIED IN THE REFERENCED STANDARDS. INSTRUMENTS SHALL BE PROPERLY MAINTAINED AND PROTECTED AGAINST DAMAGE.

B. PROVIDE INSTRUMENTS MEETING THE SPECIFICATIONS OF THE REFERENCED STANDARDS.

C. USE ONLY THOSE INSTRUMENTS WHICH HAVE THE MAXIMUM FIELD MEASURING ACCURACY AND ARE BEST SUITED TO THE FUNCTION BEING MEASURED.

D. APPLY INSTRUMENT AS RECOMMENDED BY THE MANUFACTURER.

E. USE INSTRUMENTS WITH MINIMUM SCALE AND MAXIMUM SUBDIVISIONS AND WITH SCALE RANGES PROPER FOR THE VALUE BEING MEASURED.

F. WHEN AVERAGING VALUES, TAKE A SUFFICIENT QUANTITY OF READINGS WHICH WILL RESULT IN A REPEATABILITY ERROR OF LESS THAN 5 PERCENT. WHEN MEASURING A SINGLE POINT, REPEAT READINGS UNTIL 2 CONSECUTIVE IDENTICAL VALUES ARE OBTAINED.

G. TAKE ALL READING WITH THE EYE AT THE LEVEL OF THE INDICATED VALUE TO PREVENT PARALLAX.

H. USE PULSATION DAMPENERS WHERE NECESSARY TO ELIMINATE ERROR INVOLVED IN ESTIMATING AVERAGE OF RAPIDLY FLUCTUATION READINGS.

I. TAKE MEASUREMENTS IN THE SYSTEM WHERE BEST SUITED TO THE TASK.

3.3 PERFORMING TESTING, ADJUSTING, AND BALANCING:

A. PERFORM TESTING AND BALANCING PROCEDURES ON EACH SYSTEM IDENTIFIED, IN ACCORDANCE WITH THE DETAILED PROCEDURES OUTLINED IN THE REFERENCED STANDARDS.

B. RETEST, ADJUST, AND BALANCE SYSTEMS SUBSEQUENT TO SIGNIFICANT SYSTEM MODIFICATIONS, AND RESUBMIT TEST RESULTS.

3.4 RECORD AND REPORT DATA:

A. RECORD ALL DATA OBTAINED DURING TESTING, ADJUSTING, AND BALANCING IN ACCORDANCE WITH, AND ON THE FORMS RECOMMENDED BY THE REFERENCED STANDARDS, AND AS APPROVED ON THE SAMPLE REPORT FORMS.

B. PREPARE REPORT OF RECOMMENDATIONS FOR CORRECTING UNSATISFACTORY MECHANICAL PERFORMANCES WHEN SYSTEM CANNOT BE SUCCESSFULLY BALANCED..

SECTION 16010
BASIC ELECTRICAL REQUIREMENTS

PART 1 - GENERAL

1.1 RECORD DOCUMENTS:

A. PREPARE RECORD DOCUMENTS TO INDICATE INSTALLED CONDITIONS FOR:

1. MAJOR RACEWAY SYSTEMS, SIZE AND LOCATION, FOR BOTH EXTERIOR AND INTERIOR; LOCATIONS OF CONTROL DEVICES; DISTRIBUTION AND BRANCH ELECTRICAL CIRCUITRY; AND FUSE AND CIRCUIT BREAKER SIZE AND ARRANGEMENTS.

2. EQUIPMENT LOCATIONS (EXPOSED AND CONCEALED), DIMENSIONED FROM PROMINENT BUILDING LINES.

3. APPROVED SUBSTITUTIONS, CONTRACT MODIFICATIONS, AND ACTUAL EQUIPMENT AND MATERIALS INSTALLED.

PART 2 - PRODUCTS (NOT APPLICABLE)

PART 3 - EXECUTION

3.1 RECORD DOCUMENTS:

A. VERIFY FINAL LOCATIONS FOR ROUGH-INS WITH FIELD MEASUREMENTS AND WITH THE REQUIREMENTS OF THE ACTUAL EQUIPMENT TO BE CONNECTED.

3.2 ELECTRICAL INSTALLATIONS:

A. GENERAL: SEQUENCE, COORDINATE, AND INTEGRATE THE VARIOUS ELEMENTS OF ELECTRICAL SYSTEMS, MATERIALS, AND EQUIPMENT. COMPLY WITH THE FOLLOWING REQUIREMENTS:

1. COORDINATE ELECTRICAL SYSTEMS, EQUIPMENT, AND MATERIALS INSTALLATION WITH OTHER BUILDING COMPONENTS.

2. VERIFY ALL DIMENSIONS BY FIELD MEASUREMENTS.

3. ARRANGE FOR CHASES, SLOTS, AND OPENINGS IN OTHER BUILDING COMPONENTS DURING PROGRESS OF CONSTRUCTION, TO ALLOW FOR ELECTRICAL INSTALLATIONS.

4. WHERE MOUNTING HEIGHTS ARE NOT DETAILED OR DIMENSIONED, INSTALL SYSTEMS, MATERIALS, AND EQUIPMENT TO PROVIDE THE MAXIMUM HEADROOM POSSIBLE.

5. INSTALL SYSTEMS, MATERIALS, AND EQUIPMENT TO CONFORM WITH APPROVED SUBMITTAL DATA, INCLUDING COORDINATION DRAWINGS, TO GREATEST EXTENT POSSIBLE. CONFORM TO ARRANGEMENTS INDICATED BY THE CONTRACT DOCUMENTS, RECOGNIZING THAT PORTIONS OF THE WORK ARE SHOWN ONLY IN DIAGRAMMATIC FORM. WHERE COORDINATION REQUIREMENTS CONFLICT WITH INDIVIDUAL SYSTEM REQUIREMENTS, REFER CONFLICT TO ENGINEER.

6. INSTALL SYSTEMS, MATERIALS, AND EQUIPMENT LEVEL AND PLUMB, PARALLEL AND PERPENDICULAR TO OTHER BUILDING SYSTEMS AND COMPONENTS, WHERE INSTALLED EXPOSED IN FINISHED SPACES.

7. INSTALL ELECTRICAL EQUIPMENT TO FACILITATE SERVICING, MAINTENANCE, AND REPAIR OR REPLACEMENT OF EQUIPMENT COMPONENTS. AS MUCH AS PRACTICAL, CONNECT EQUIPMENT FOR EASE OF DISCONNECTING, WITH MINIMUM OF INTERFERENCE WITH OTHER INSTALLATIONS.

8. INSTALL SYSTEMS, MATERIALS, AND EQUIPMENT GIVING RIGHT-OF-WAY PRIORITY TO SYSTEMS REQUIRED TO BE INSTALLED AT A SPECIFIED SLOPE.

3.3 CUTTING AND PATCHING:

A. GENERAL: PERFORM CUTTING AND PATCHING IN ACCORDANCE WITH THE FOLLOWING REQUIREMENTS:

1. PERFORM CUTTING, FITTING, AND PATCHING OF ELECTRICAL EQUIPMENT AND MATERIALS REQUIRED TO:

- UNCOVER WORK TO PROVIDE FOR INSTALLATION OF ILL-TIMED WORK.
- REMOVE AND REPLACE DEFECTIVE WORK.
- REMOVE AND REPLACE WORK NOT CONFORMING TO REQUIREMENTS OF THE CONTRACT DOCUMENTS.
- INSTALL EQUIPMENT AND MATERIALS IN EXISTING STRUCTURES.
- UPON WRITTEN INSTRUCTIONS FROM THE ARCHITECT, UNCOVER AND RESTORE WORK TO PROVIDE FOR ENGINEER OBSERVATION OF CONCEALED WORK.

2. CUT, REMOVE, AND LEGALLY DISPOSE OF SELECTED ELECTRICAL EQUIPMENT, COMPONENTS, AND MATERIALS AS INDICATED, INCLUDING NUT NOT LIMITED TO REMOVAL OF ELECTRICAL ITEMS INDICATED TO BE REMOVED AND ITEMS MADE OBSOLETE BY THE NEW WORK.

3. PROTECT THE STRUCTURE, FURNISHINGS, FINISHES, AND ADJACENT MATERIALS NOT INDICATED OR SCHEDULED TO BE REMOVED.

4. PROVIDE AND MAINTAIN TEMPORARY PARTITIONS OR DUST BARRIERS ADEQUATE TO PREVENT THE SPREAD OF DUST AND DIRT TO ADJACENT AREAS.

5. PROTECTION OF INSTALLED WORK: DURING CUTTING AND PATCHING OPERATIONS, PROTECT ADJACENT INSTALLATIONS.

6. PATCH EXISTING FINISHED SURFACES AND BUILDING COMPONENTS USING NEW MATERIALS MATCHING EXISTING MATERIALS AND EXPERIENCED INSTALLERS. INSTALLERS' QUALIFICATIONS REFER TO THE MATERIALS AND METHODS REQUIRED FOR THE SURFACE AND BUILDING COMPONENTS BEING PATCHED.

SECTION 16050
BASIC ELECTRICAL MATERIALS AND METHODS

PART 1 - GENERAL

1.1 PROJECT CONDITIONS:

A. CONDITIONS AFFECTING SELECTIVE DEMOLITION: THE FOLLOWING PROJECT CONDITIONS APPLY:

1. PROTECT ADJACENT MATERIALS INDICATED TO REMAIN. INSTALL AND MAINTAIN DUST AND NOISE BARRIERS TO KEEP DIRT, DUST, AND NOISE FROM BEING TRANSMITTED TO ADJACENT AREAS. REMOVE PROTECTION AND BARRIERS AFTER DEMOLITION OPERATIONS ARE COMPLETE.

2. LOCATE, IDENTIFY, AND PROTECT ELECTRICAL SERVICES PASSING THROUGH DEMOLITION AREA AND SERVING OTHER AREAS OUTSIDE THE DEMOLITION LIMITS. MAINTAIN SERVICES TO AREAS OUTSIDE DEMOLITION LIMITS. WHEN SERVICES MUST BE INTERRUPTED, INSTALL TEMPORARY SERVICES FOR AFFECTED AREAS.

1.2 SEQUENCE AND SCHEDULING:

A. COORDINATE THE SHUT-OFF AND DISCONNECTION OF ELECTRICAL SERVICE WITH THE OWNER.

B. NOTIFY THE ENGINEER / ARCHITECT AT LEAST 5 DAYS PRIOR TO COMMENCING DEMOLITION OPERATIONS.

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SUBMISSION:

12/13/2023	REVIEW/COORDINATION
12/30/2023	BIDDING
1/15/2024	PERMITS
4/23/2024	REDESIGN FOR REVIEW/ COORDINATION
4/26/2024	REVISION 1 REVISED FOR RE-BID

NJ PROFESSIONAL ENGINEER No. 24GE03895900
PA PROFESSIONAL ENGINEER No. PE075142
DE PROFESSIONAL ENGINEER No. 17464
NY PROFESSIONAL ENGINEER No. 088381
MD PROFESSIONAL ENGINEER No. 36281
CT PROFESSIONAL ENGINEER No. 0031563
FL PROFESSIONAL ENGINEER No. 71354

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MECHANICAL/ELECTRICAL SPECIFICATIONS
FOR
FAIRFIELD TOWNSHIP SENIOR CENTER RENOVATIONS AND ADA IMPROVEMENTS
SITUATED AT
68 FAIRTON-GOULDTOWN RD.
BRIDGETON, NJ 08302

SCALE:	AS NOTED
DATE:	1/15/2024
DRAWN BY:	KJG
CHECKED BY:	DJF
APPROVED BY:	DAL SR

DWG NO.
M/E3

PART 2 - PRODUCTS

2.1 MISCELLANEOUS METALS:

A. STEEL PLATES, SHAPES, BARS, AND BAR GRATING: ASTM A 36.

B. COLD-FORMED STEEL TUBING: ASTM A 500

C. HOT-ROLLED STEEL TUBING: ASTM A 501.

D. STEEL PIPE: ASTM A 53, SCHEDULE 40, WELDED.

E. NON-SHRINK, NONMETALLIC GROUT: PREMIXED, FACTORY-PACKAGED, NON-STAINING, NON-CORROSIVE, NONGASEOUS GROUT, RECOMMENDED FOR INTERIOR AND EXTERIOR APPLICATIONS.

F. FASTENERS: ZINC-COATED, TYPE, GRADE, AND CLASS AS REQUIRED.

2.2 MISCELLANEOUS LUMBER:

A. FRAMING MATERIALS: STANDARD GRADE, LIGHT-FRAMING-SIZE LUMBER OF ANY SPECIES. NUMBER 3 COMMON OR STANDARD GRADE BOARDS COMPLYING WITH WCLIB OR AWPA RULES, OR NUMBER 3 BOARDS COMPLYING WITH SPIB RULES. LUMBER SHALL PRESERVATIVE TREATED IN ACCORDANCE WITH AWPB LP-2, AND KILN DRIED TO A MOISTURE CONTENT OF NOT MORE THAN 19 PERCENT.

B. CONSTRUCTION PANELS: PLYWOOD PANELS; APA C-D PLUGGED INT, WITH EXTERIOR GLUE; THICKNESS AS INDICATED, OR IF NOT INDICATED, NOT LESS THAT 15/32 INCHES.

PART 3 - EXECUTION

3.1 EXAMINATION:

A. EXAMINE SUBSTRATES, AREAS, AND CONDITIONS, WITH INSTALLER PRESENT, FOR COMPLIANCE WITH REQUIREMENTS FOR INSTALLATION TOLERANCES AND OTHER CONDITIONS AFFECTING INSTALLATION AND APPLICATION OF JOINT SEALERS AND ACCESS PANELS. DO NOT PROCEED WITH INSTALLATION UNTIL UNSATISFACTORY CONDITIONS HAVE BEEN CORRECTED.

3.2 SELECTIVE DEMOLITION:

A. GENERAL: DEMOLISH, REMOVE, DEMOUNT, AND DISCONNECT ABANDONED ELECTRICAL MATERIALS AND EQUIPMENT NO LONGER REQUIRED AND / OR MADE OBSOLETE BY THE NEW WORK.

B. DISPOSAL AND CLEANUP: REMOVE FROM THE SITE AND LEGALLY DISPOSE OF DEMOLISHED MATERIALS AND EQUIPMENT NOT INDICATED TO BE SALVAGED.

C. ELECTRICAL MATERIALS AND EQUIPMENT: DEMOLISH, REMOVE, DEMOUNT, AND DISCONNECT THE FOLLOWING ITEMS:

1. INACTIVE AND OBSOLETE RACEWAY SYSTEMS, CONTROLS, AND FIXTURES.:
   - RACEWAYS EMBEDDED IN FLOORS, WALLS, AND CEILINGS MAY REMAIN IF SUCH MATERIALS DO NOT INTERFERE WITH NEW INSTALLATIONS. REMOVE MATERIALS ABOVE ACCESSIBLE CEILINGS.
2. PERFORM CUTTING AND PATCHING REQUIRED FOR DEMOLITION.

3.3 ERECTION OF METAL SUPPORTS AND ANCHORAGE:

A. CUT, FIT, AND PLACE MISCELLANEOUS METAL FABRICATIONS ACCURATELY IN LOCATION, ALIGNMENT, AND ELEVATION TO SUPPORT AND ANCHOR ELECTRICAL MATERIALS AND EQUIPMENT.

B. FIELD WELDING: COMPLY WITH AWS "STRUCTURAL WELDING CODE".

3.4 ERECTION OF WOOD SUPPORTS AND ANCHORAGE:

A. CUT, FIT, AND PLACE WOOD GROUNDS, NAILERS, BLOCKING, AND ANCHORAGE ACCURATELY IN LOCATION ALIGNMENT, AND ELEVATION TO SUPPORT AND ANCHOR ELECTRICAL MATERIALS AND EQUIPMENT.

B. SELECT FASTENER SIZES THAT WILL NOT PENETRATE MEMBERS WHERE OPPOSITE SIDE WILL BE EXPOSED TO VIEW OR WILL RECEIVE FINISH MATERIALS. MAKE TIGHT CONNECTIONS BETWEEN MEMBERS. INSTALL FASTENERS WITHOUT SPLITTING WOOD MEMBERS..

C. ATTACH TO SUBSTRATES AS REQUIRED TO SUPPORT APPLIED LOADS.

SECTION 16110 - RACEWAYS

PART 1 - GENERAL

1.1 QUALITY ASSURANCE:

A. ELECTRICAL COMPONENT STANDARD: COMPONENTS AND INSTALLATION SHALL COMPLY WITH NFPA 70 "NATIONAL ELECTRICAL CODE".

B. NEMA COMPLIANCE: COMPLY WITH APPLICABLE REQUIREMENTS OF NEMA STANDARDS PERTAINING TO RACEWAYS.

C. UL COMPLIANCE AND LABELING: COMPLY WITH APPLICABLE REQUIREMENTS OF UL STANDARDS PERTAINING TO ELECTRICAL RACEWAY SYSTEMS. PROVIDE RACEWAY PRODUCTS AND COMPONENTS LISTED AND LABELED BY UL, ETL, OR CSA.

PART 2 - PRODUCTS

2.1 METAL CONDUIT AND TUBING:

A. RIGID STEEL CONDUIT: ANSI C80.1.

B. ELECTRICAL METALLIC TUBING AND FITTINGS: ANSI C80.3.

C. FLEXIBLE METAL CONDUIT: UL 1, ZINC-COATED STEEL.

D. LIQUIDTIGHT FLEXIBLE METAL CONDUIT AND FITTINGS: UL 360. FITTINGS SHALL BE SPECIFICALLY APPROVED FOR USE WITH THIS RACEWAY.

2.2 CONDUIT BODIES:

A. GENERAL: TYPES, SHAPES, AND SIZES AS REQUIRED TO SUIT INDIVIDUAL APPLICATIONS AND NEC REQUIREMENTS. PROVIDE MATCHING GASKETED COVERS SECURED WITH CORROSION-RESISTANT SCREWS.

B. METALLIC CONDUIT AND TUBING: USE METALLIC CONDUIT BODIES. USE BODIES WITH THREADED HUBS FOR THREADED RACEWAYS.

C. CONDUIT BODIES 1 INCH AND SMALLER: USE BODIES WITH COMPRESSION-TYPE EMT CONNECTORS.

PART 3 - EXECUTION

3.1 WIRING METHOD:

A. INDOORS: USE THE FOLLOWING WIRING METHODS:

1. CONNECTION TO VIBRATING EQUIPMENT: INCLUDING TRANSFORMERS AND HYDRAULIC, PNEUMATIC OR ELECTRIC SOLENOID OR MOTOR-OPERATED EQUIPMENT: FLEXIBLE METAL CONDUIT.
2. EXPOSED: ELECTRICAL METALLIC TUBING.
3. CONCEALED: ELECTRICAL METALLIC TUBING, ELECTRICAL NONMETALLIC TUBING, OR RIGID NONMETALLIC CONDUIT.

3.2 INSTALLATION:

A. GENERAL: INSTALL ELECTRICAL RACEWAYS IN ACCORDANCE WITH MANUFACTURER'S WRITTEN INSTALLATION INSTRUCTIONS, APPLICABLE REQUIREMENTS OF NEC, AND AS FOLLOWS:

B. CONCEAL CONDUIT AND EMT, UNLESS INDICATED OTHERWISE, WITHIN FINISHED WALLS, CEILINGS, AND FLOORS. INSTALL RACEWAYS LEVEL AND SQUARE AND AT PROPER ELEVATIONS.

C. COMPLETE INSTALLATION OF ELECTRICAL RACEWAYS BEFORE STARTING INSTALLATION OF CONDUCTORS WITHIN RACEWAYS.

D. PROVIDE SUPPORTS FOR RACEWAYS AS SPECIFIED ELSEWHERE IN DIVISION 16.

E. PREVENT FOREIGN MATTER FROM ENTERING RACEWAYS BY USING TEMPORARY CLOSURE PROTECTION.

F. MAKE BENDS AND OFFSETS SO THE INSIDE DIAMETER IS NOT EFFECTIVELY REDUCED. UNLESS OTHERWISE INDICATED, KEEP THE LEGS OF A BEND IN THE SAME PLANE AND THE STRAIGHT LEGS OF OFFSETS PARALLEL.

G. USE RACEWAY FITTINGS THAT ARE TYPES COMPATIBLE WITH THE ASSOCIATED RACEWAY AN SUITABLE FOR THE USE AND LOCATION.

H. RUN CONCEALED RACEWAYS WITH A MINIMUM OF BENDS IN THE SHORTEST PRACTICAL DISTANCE CONSIDERING THE TYPE OF BUILDING CONSTRUCTION AND OBSTRUCTIONS EXCEPT AS OTHERWISE INDICATED. THIS DOES NOT APPLY TO CONDUITS IN CRAWL SPACES.

I. INSTALL EXPOSED RACEWAYS PARALLEL AND PERPENDICULAR TO NEARBY SURFACES OR STRUCTURAL MEMBERS AND FOLLOW THE SURFACE CONTOURS AS MUCH AS PRACTICAL.

J. RUN EXPOSED, PARALLEL, OR BANKED RACEWAYS TOGETHER. MAKE BENDS IN PARALLEL OR BANKED RUNS FROM THE SAME CENTER LINE SO THAT THE BENDS ARE PARALLEL. FACTORY ELBOWS MAY BE USED IN BANKED RUNS ONLY WHERE THEY CAN BE INSTALLED PARALLEL. THIS REQUIRES THAT THERE BE A CHANGE IN THE PLANE OF THE RUN SUCH AS FROM WALL TO CEILING AND THAT THE RACEWAYS BE OF THE SAME SIZE. IN OTHER CASES PROVIDE FIELD BENDS FOR PARALLEL RACEWAYS.

K. JOIN RACEWAYS WITH FITTINGS DESIGNED APPROVED FOR THE PURPOSE AND MAKE JOINTS TIGHT. WHERE JOINTS CANNOT BE MADE TIGHT, USE BONDING JUMPERS TO PROVIDE ELECTRICAL CONTINUITY OF THE RACEWAY SYSTEM. MAKE RACEWAY TERMINATIONS TIGHT. WHERE TERMINATIONS ARE SUBJECT TO VIBRATION, USE BONDING BUSHINGS OR WEDGES TO ASSURE ELECTRICAL CONTINUITY. WHERE SUBJECT TO VIBRATION OR DAMPNESS, USE INSULATING BUSHINGS TO PROTECT CONDUCTORS.

L. TIGHTEN SET SCREWS OF THREADLESS FITTINGS WITH SUITABLE TOOL.

M. TERMINATIONS: WHERE RACEWAYS ARE TERMINATED WITH LOCKNUTS AND BUSHINGS, ALIGN THE RACEWAY TO ENTER SQUARELY AND INSTALL THE LOCKNUTS WITH DISHED PART AGAINST THE BOX. THERE TERMINATIONS CANNOT BE MADE SECURE WITH ONE LOCKNUT, USE TWO LOCKNUTS, ONE INSIDE AND ONE OUTSIDE THE BOX.

N. WHERE TERMINATING IN THREADED HUBS, SCREW THE RACEWAY OR FITTING TIGHT INTO THE HUB SO THE END BEARS AGAINST THE WIRE PROTECTION SHOULDER. WHERE CHASE NIPPLES ARE USED, ALIGN THE RACEWAY SO THE COUPLING IS SQUARE TO THE BOX, AND TIGHTEN THE CHASE NIPPLE SO NO THREADS ARE EXPOSED.

O. FLEXIBLE CONNECTIONS: USE SHORT LENGTH (MAXIMUM OF 6 FT.) OF FLEXIBLE CONDUIT FOR RECESSED AND SEMI-RECESSED LIGHTING FIXTURES, FOR EQUIPMENT SUBJECT TO VIBRATION, NOISE TRANSMISSION, OR MOVEMENT; AND FOR ALL MOTORS. USE LIQUIDTIGHT FLEXIBLE CONDUIT IN WET LOCATIONS. INSTALL SEPARATE GROUND CONDUCTOR ACROSS FLEXIBLE CONNECTIONS.

P. DO NOT INSTALL ALUMINUM CONDUIT EMBEDDED IN OR IN CONTACT WITH CONCRETE.

3.3 ADJUSTING AND CLEANING:

A. UPON COMPLETION OF INSTALLATION OF RACEWAYS, INSPECT INTERIORS OF RACEWAYS; CLEAR ALL BLOCKADES AND REMOVE BURRS, DIRT, AND CONSTRUCTION DEBRIS.

SECTION 16120 WIRES AND CABLES

PART 1 - GENERAL

1.1 QUALITY ASSURANCE:

A. REGULATORY REQUIREMENTS: COMPLY WITH PROVISIONS OF THE FOLLOWING CODE.

B. NFPA 70 "NATIONAL ELECTRICAL CODE".

1. CONFORM TO APPLICABLE CODES AND REGULATIONS REGARDING TOXICITY OF COMBUSTION PRODUCTS OF INSULATING MATERIALS.

C. UL COMPLIANCE: PROVIDE COMPONENTS WHICH ARE LISTED AND LABELED BY UL UNDER THE FOLLOWING STANDARDS.

1. UL STD. 4 — ARMORED CABLE.
2. UL STD. 83 — THERMOPLASTIC-INSULATED WIRES AND CABLES.
3. UL STD. 486A — WIRE CONNECTORS AND SOLDERING LUGS FOR USE WITH COPPER CONDUCTORS
4. UL STD. 486B — WIRE CONNECTORS FOR USE WITH ALUMINUM CONDUCTORS.

D. NEMA/ICEA COMPLIANCE: PROVIDE COMPONENTS WHICH COMPLY WITH THE FOLLOWING STANDARDS:

1. WC-5 THERMOPLASTIC-INSULATED WIRE AND CABLE FOR THE TRANSMISSION AND DISTRIBUTION OF ELECTRICAL ENERGY.
2. WC-7 CROSS LINKED THERMOSETTING POLYETHYLENE-INSULATED WIRE AND CABLE FOR THE TRANSMISSION AND DISTRIBUTION OF ELECTRICAL ENERGY.
3. WC-8 ETHYLENE-PROPYLENE-RUBBER-INSULATED WIRE AND CABLE FOR THE TRANSMISSION AND DISTRIBUTION OF ELECTRICAL ENERGY.

E. IEEE COMPLIANCE: PROVIDE COMPONENTS WHICH COMPLY WITH THE FOLLOWING STANDARD.

1. STD. 82 TEST PROCEDURES FOR IMPULSE VOLTAGE TESTS ON INSULATED CONDUCTORS.

PART 2 - PRODUCTS

2.1 WIRES AND CABLES:

A. GENERAL: PROVIDE WIRE AND CABLE SUITABLE FOR THE TEMPERATURE, CONDITIONS AND LOCATION WHERE INSTALLED.

B. CONDUCTORS: PROVIDE SOLID CONDUCTORS FOR POWER AND LIGHTING CIRCUITS NO. 10 AWG AND SMALLER. PROVIDE STRANDED CONDUCTORS FOR SIZES NO. 8 AWG AND LARGER.

C. CONDUCTOR MATERIAL: COPPER FOR ALL WIRES AND CABLES.

D. CONDUCTOR MATERIAL: USE THE FOLLOWING MATERIAL FOR SIZES INDICATED.

1. NO. 6 AWG AND SMALLER: COPPER
2. NO. 4 AWG AND LARGER: COPPER.

E. INSULATION: PROVIDE THHN/THWN INSULATION FOR ALL CONDUCTORS SIZE 500MCM AND LARGER, AND NO. 8 AWG AND SMALLER. FOR ALL OTHER SIZES PROVIDE THW, THHN/THWN OR XHHW INSULATION AS APPROPRIATE FOR THE LOCATIONS WHERE INSTALLED.

F. COLOR CODING FOR PHASE IDENTIFICATION IN ACCORDANCE WITH TABLE 1 IN PART 3 BELOW.

G. JACKETS: FACTORY-APPLIED NYLON OR PVC EXTERNAL JACKETED WIRES AND CABLES FOR PULLS IN RACEWAYS OVER 100 FT. IN LENGTH, FOR PULLS IN RACEWAYS WITH MORE THAN THREE EQUIVALENT 90 DEG. BENDS, FOR PULLS IN CONDUITS UNDERGROUND OR UNDER SLABS ON GRADE, AND WHERE INDICATED.

H. CABLES: PROVIDE THE FOLLOWING TYPE(S) OF CABLES IN NEC APPROVED LOCATIONS AND APPLICATIONS WHERE INDICATED. PROVIDE CABLE UL LISTED FOR PARTICULAR APPLICATION:

1. ARMORED CABLE: TYPES AC AND ACL
2. METAL-CLAD CABLE: TYPE MC.

2.2 CONNECTORS FOR CONDUCTORS:

A. PROVIDE UL-LISTED FACTORY-FABRICATED, SOLDERLESS METAL CONNECTORS OR SIZES, AMPACITY RATINGS, MATERIALS, TYPES AND CLASSES FOR APPLICATIONS AND FOR SERVICES INDICATED. USE CONNECTORS WITH TEMPERATURE RATINGS EQUAL TO OR GREATER THAN THOSE OF THE WIRES UPON WHICH USED.

PART 3 - EXECUTION

3.1 WIRING METHOD:

A. USE THE FOLLOWING WIRING METHODS AS INDICATED:

1. WIRE: INSTALL ALL WIRE IN RACEWAY.
2. METAL CLAD CABLE, TYPE MC: WHERE INDICATED AND ELSEWHERE, WHERE PERMITTED BY CODE.

3.2 INSTALLATION OF WIRES AND CABLES:

A. GENERAL: INSTALL ELECTRICAL CABLES, WIRES, AND CONNECTORS IN COMPLIANCE WITH NEC.

B. COORDINATE CABLE INSTALLATION WITH OTHER WORK.

C. PULL CONDUCTORS SIMULTANEOUSLY WHERE MORE THAN ONE IS BEING INSTALLED IN SAME RACEWAY. USE UL LISTED PULLING COMPOUND OR LUBRICANT, WHERE NECESSARY.

D. USE PULLING MEANS INCLUDING, FISH TAPE, CABLE, ROPE, AND BASKET WEAVE WIRE/CABLE GRIPS WHICH WILL NOT DAMAGE CABLES OR RACEWAYS. DO NOT USE ROPE HITCHES FOR PULLING ATTACHMENT TO WIRE OR CABLE.

E. CONCEAL ALL CABLE IN FINISHED SPACES.

F. INSTALL EXPOSED CABLE PARALLEL AND PERPENDICULAR TO SURFACES OR EXPOSED STRUCTURAL MEMBERS, AND FOLLOW SURFACE CONTOURS, WHERE POSSIBLE.

G. KEEP CONDUCTOR SPLICES TO MINIMUM.

H. INSTALL SPLICE AND TAP CONNECTORS WHICH POSSESS EQUIVALENT OR BETTER MECHANICAL STRENGTH AND INSULATION RATING THAN CONDUCTORS BEING SPLICED.

I. USE SPLICE AND TAP CONNECTORS WHICH ARE COMPATIBLE WITH CONDUCTOR MATERIAL.

J. PROVIDE ADEQUATE LENGTH OF CONDUCTORS WITHIN ELECTRICAL ENCLOSURES AND TRAIN THE CONDUCTORS TO TERMINAL POINTS WITH NO EXCESS. BUNDLE MULTIPLE CONDUCTORS, WITH CONDUCTORS LARGER THAN NO 10 AWG CABLED IN INDIVIDUAL CIRCUITS. MAKE TERMINATIONS SO THERE IS NO BARE CONDUCTOR AT THE TERMINAL.

K. TIGHTEN ELECTRICAL CONNECTORS AND TERMINALS, INCLUDING SCREWS AND BOLTS, IN ACCORDANCE WITH MANUFACTURER'S PUBLISHED TORQUE TIGHTENING VALUES. WHERE MANUFACTURER'S TORQUING REQUIREMENTS ARE NOT INDICATED, TIGHTEN CONNECTORS AND TERMINALS TO COMPLY WITH TIGHTENING TORQUES SPECIFIED IN UL 486A AND UL 486B.

3.3 FIELD QUALITY CONTROL:

A. PRIOR TO ENERGIZING, CHECK INSTALLED WIRES AND CABLES WITH MEGOHM METER TO DETERMINE INSULATION RESISTANCE LEVELS TO ASSURE REQUIREMENTS ARE FULFILLED.

B. PRIOR TO ENERGIZING, TEST WIRES AND CABLES FOR ELECTRICAL CONTINUITY AND FOR SHORT-CIRCUITS.

C. SUBSEQUENT TO WIRE AND CABLE HOOK-UPS, ENERGIZE CIRCUITS AND DEMONSTRATE PROPER FUNCTIONING. CORRECT MALFUNCTIONING UNITS, AND RETEST TO DEMONSTRATE COMPLIANCE..

SECTION 16143 WIRING DEVICES

PART 1 - GENERAL

1.1 QUALITY ASSURANCE:

A. REGULATORY REQUIREMENTS: COMPLY WITH PROVISIONS OF THE FOLLOWING CODE.

B. NFPA 70 "NATIONAL ELECTRICAL CODE".

1. UL AND NEMA COMPLIANCE: PROVIDE WIRING DEVICES WHICH ARE LISTED AND LABELED BY UL AND COMPLY WITH APPLICABLE UL AND NEMA STANDARDS..

1.2 SEQUENCE AND SCHEDULING:

A. SCHEDULE INSTALLATION OF FINISH PLATES AFTER THE SURFACE UPON WHICH THEY ARE INSTALLED HAS RECEIVED FINAL FINISH.

PART 2 - PRODUCTS

2.1 WIRING DEVICES:

A. GENERAL: PROVIDE WIRING DEVICES, IN TYPES, CHARACTERISTICS, GRADES, COLORS, AND ELECTRICAL RATINGS FOR APPLICATIONS INDICATED WHICH ARE UL LISTED AND WHICH COMPLY WITH NEMA WD 1 AND OTHER APPLICABLE UL AND NEMA STANDARDS. PROVIDE IVORY COLOR DEVICES AND WALL PLATES EXCEPT AS OTHERWISE INDICATED. VERIFY COLOR SELECTIONS WITH ARCHITECT.

B. RECEPTACLES: COMPLY WITH UL 498 AND NEMA WD 1.

C. RECEPTACLES, INDUSTRIAL HEAVY DUTY: PROVIDE PIN AND SLEEVE DESIGN RECEPTACLES CONFORMING TO UL 498. COMPLY WITH UL 1010 WHERE INSTALLED IN HAZARDOUS LOCATIONS. PROVIDE FEATURES INDICATED.

D. GROUND-FAULT INTERRUPTER (GFI) RECEPTACLES: AS INDICATED IN TABLE 1 IN PART 3 BELOW; PROVIDE "FEED-THRU" TYPE GROUND FAULT CIRCUIT INTERRUPTER, WITH INTEGRAL HEAVY DUTY NEMA 5-20R DUPLEX RECEPTACLES ARRANGED TO PROTECT CONNECTED DOWNSTREAM RECEPTACLES ON SAME CIRCUIT. PROVIDE UNIT DESIGNED FOR INSTALLATION IN A 2 3/4 INCH DEEP OUTLET BOX WITHOUT ADAPTER, GROUNDING TYPE, CLASS A, GROUP 1, PER UL STANDARD 943.

E. PLUGS: 20 AMPERES, 125 VOLTS, 3 WIRE, GROUNDING, ARMORED CAP PLUGS, PARALLEL BLADES WITH CORD CLAMP, AND 0.4 INCH CORD HOLE; MATCH NEMA CONFIGURATION WITH POWER SOURCE'S.

F. PLUG CONNECTORS: 20 AMPERES, 125 VOLTS, BAKELITE-BODY ARMORED CONNECTORS, 3 WIRE, GROUNDING, PARALLEL BLADES, DOUBLE WIPE CONTACT, WITH CORD CLAMP, AND 0.4 INCH CORD HOLE, MATCH NEMA CONFIGURATION TO MATING PLUG'S. ARRANGE AS INDICATED.

G. SNAP SWITCHES: QUIET TYPE AC SWITCHES AS INDICATED IN TABLE 2 IN PART 3 BELOW. COMPLY WITH UL 20 AND NEMA WD 1.

H. COMBINATION SWITCH AND RECEPTACLE: GENERAL DUTY 3 WAY QUIET SWITCH, 20 AMPERES, 120-277 VOLTS AC, WITH TOGGLE SWITCH HANDLE, AND 3 WIRE GROUNDING RECEPTACLE, 15 AMPERES, 120 VOLTS, EQUIP WITH PLASTER EARS, AND WITH BREAK-OFF TAB FEATURE WHICH ALLOWS WIRING WITH SEPARATE OR COMMON FEED, WITH NEMA CONFIGURATION 5-15R.

2.2 WIRING AND ACCESSORIES:

A. WALL PLATES: SINGLE AND COMBINATION, OF TYPES, SIZES, AND WITH GANGING AND CUTOUTS AS INDICATED. PROVIDE PLATES WHICH MATE AND MATCH WITH WIRING DEVICES TO WHICH ATTACHED. PROVIDE METAL SCREWS FOR SECURING PLATES TO DEVICES WITH SCREW HEADS COLORED TO MATCH FINISH OF PLATES. PROVIDE WALL PLATE COLOR TO MATCH WIRING DEVICES EXCEPT AS OTHERWISE INDICATED. PROVIDE WALL PLATES WITH ENGRAVED LEGEND WHERE INDICATED.

PART 3 - EXECUTION

3.1 INSTALLATION OF WIRING DEVICES AND ACCESSORIES:

A. INSTALL WIRING DEVICES AND ACCESSORIES AS INDICATED, IN ACCORDANCE WITH MANUFACTURER'S WRITTEN INSTRUCTIONS, APPLICABLE REQUIREMENTS OF NEC AND IN ACCORDANCE WITH RECOGNIZED INDUSTRY PRACTICES TO FULFILL PROJECT REQUIREMENTS.

B. COORDINATE WITH OTHER WORK, INCLUDING PAINTING, ELECTRICAL BOXES AND WIRING INSTALLATIONS, AS NECESSARY TO INTERFERE INSTALLATION OF WIRING DEVICES WITH OTHER WORK.

C. INSTALL WIRING DEVICES ONLY ONLY IN ELECTRICAL BOXES WHICH ARE CLEAN; FREE FROM BUILDING MATERIALS, DIRT, AND DEBRIS.

D. INSTALL GALVANIZED STEEL WALL PLATES IN UNFINISHED SPACES.

E. INSTALL WIRING DEVICES AFTER WIRING WORK IS COMPLETED.

F. INSTALL WALL PLATES AFTER PAINTING WORK IS COMPLETED.

G. TIGHTEN CONNECTORS AND TERMINALS, INCLUDING SCREWS AND BOLTS, IN ACCORDANCE WITH EQUIPMENT MANUFACTURER'S PUBLISHED TORQUE TIGHTENING VALUES FOR WIRING DEVICES. WHERE MANUFACTURER'S TORGUING REQUIREMENTS ARE NOT INDICATED, TIGHTEN CONNECTORS AND TERMINALS TO COMPLY WITH TIGHTENING TORQUES SPECIFIED IN UL STANDARD 486A. USE PROPERLY SCALED TORQUE INDICATING HAND TOOL.

3.2 PROTECTION:

A. PROTECT INSTALLED COMPONENTS FROM DAMAGE. REPLACE DAMAGED ITEMS PRIOR TO FINAL ACCEPTANCE.

3.3 FIELD QUALITY CONTROL:

A. TESTING: PRIOR TO ENERGIZING CIRCUITS, TEST WIRING FOR ELECTRICAL CONTINUITY, AND FOR SHORT-CIRCUITS. ENSURE PROPER POLARITY OF CONNECTIONS IS MAINTAINED. SUBSEQUENT TO ENERGIZING, TEST WIRING DEVICES AND DEMONSTRATE COMPLIANCE WITH REQUIREMENTS, OPERATING EACH OPERABLE DEVICE AT LEAST SIX TIMES.

B.' TEST GROUND FAULT INTERRUPTER OPERATION WITH BOTH LOCAL AND REMOTE FAULT SIMULATIONS IN ACCORDANCE WITH MANUFACTURER RECOMMENDATIONS.

SECTION 16195 ELECTRICAL IDENTIFICATION

PART 1 - GENERAL

1.1 QUALITY ASSURANCE:

A. ELECTRICAL COMPONENT STANDARD: COMPONENTS AND INSTALLATION SHALL COMPLY WITH NFPA 70 "NATIONAL ELECTRICAL CODE".

B. ANSI COMPLIANCE: COMPLY WITH REQUIREMENTS OF ANSI STANDARD A13.1, "SCHEME FOR THE IDENTIFICATION OF PIPING SYSTEMS," WITH REGARD TO TYPE AND SIZE OF LETTERING FOR RACEWAY AND CABLE LABELS.

PART 2 - PRODUCTS

2.1 ELECTRICAL IDENTIFICATION PRODUCTS:

A. UNDERGROUND LINE MARKING TAPE: PERMANENT, BRIGHT COLORED, CONTINUOUS-PRINTED, PLASTIC TAPE COMPOUNDED FOR DIRECT-BURIAL SERVICE NOT LESS THAN 6 INCHES WIDE BY 4 MILS THICK. PRINTED LEGEND INDICATIVE OF GENERAL TYPE OF UNDERGROUND LINE BELOW..

B. WIRE/CABLE DESIGNATION TAPE MARKERS: VINYL OR VINYL-CLOTH, SELF-ADHESIVE, WRAPAROUND, CABLE/CONDUCTOR MARKERS WITH PREPRINTED NUMBERS AND LETTER.

C. ENGRAVED, PLASTIC-LAMINATED LABELS, SIGNS, AND INSTRUCTION PLATES: ENGRAVING STOCK MELAMINE PLASTIC LAMINATE, 1/16-INCH MINIMUM THICK FOR SIGNS UP TO 20 SQUARE INCHES, OR 8 INCHES IN LENGTH; 1/8-INCH THICK FOR LARGER SIZES. ENGRAVED LEGEND IN WHITE LETTERS ON BLACK FACE AND PUNCHED FOR MECHANICAL FASTENERS.

D. FASTENERS FOR PLASTIC-LAMINATED AND METAL SIGNS: SELF-TAPPING STAINLESS STEEL SCREWS OR NUMBER 10/32 STAINLESS STEEL MACHINE SCREWS WITH NUTS AND FLAT AND LOCK WASHERS.

E. CABLE TIES: FUNGUS-INERT, SELF-EXTINGUISHING, ONE-PIECE, SELF-LOCKING NYLON CABLE TIES, 0.18-INCH MINIMUM WIDTH, 50-LB MINIMUM TENSILE STRENGTH, AND SUITABLE FOR A TEMPERATURE RANGE FROM MINUS 50 DEG. F TO 350 DEG. F. PROVIDE TIES IN SPECIFIED COLORS WHEN USED FOR COLOR CODING.

PART 3 - EXECUTION

3.1 INSTALLATION:

A. LETTERING AND GRAPHICS: COORDINATE NAMES, ABBREVIATIONS, COLORS, AND OTHER DESIGNATIONS USED IN ELECTRICAL IDENTIFICATION WORK WITH CORRESPONDING DESIGNATIONS SPECIFIED OR INDICATED INSTALL NUMBERS, LETTERING, AND COLORS AS APPROVED IN SUBMITTALS AND AS REQUIRED BY CODE.

B. INSTALL IDENTIFICATION DEVICES IN ACCORDANCE WITH MANUFACTURER'S WRITTEN INSTRUCTIONS AND REQUIREMENTS OF NEC.

C. UNDERGROUND ELECTRICAL LINE IDENTIFICATION: DURING TRENCH BACKFILLING, FOR EXTERIOR UNDERGROUND POWER, SIGNAL, AND COMMUNICATIONS LINES, INSTALL CONTINUOUS UNDERGROUND PLASTIC LINE MARKER, LOCATED DIRECTLY ABOVE LINE AT 6 TO 8 INCHES BELOW FINISHED GRADE. WHERE MULTIPLE LINES INSTALLED IN A COMMON TRENCH OR CONCRETE ENVELOPE, DO NOT EXCEED AN OVERALL WIDTH OF 16 INCHES; INSTALL A SINGLE LINE MARKER.

D. INSTALL LINE MARKER FOR UNDERGROUND WIRING, BOTH DIRECT-BURIED AND IN RACEWAY.

E. CONDUCTOR COLOR CODING: PROVIDE COLOR CODING FOR SECONDARY SERVICE, FEEDER, AND BRANCH CIRCUIT CONDUCTORS THROUGHOUT THE PROJECT SECONDARY ELECTRICAL SYSTEM AS FOLLOWS:

208/120 VOLTS	PHASE	480/277 VOLTS
BLACK	A	YELLOW
RED	B	BROWN
BLUE	C	ORANGE
WHITE	NEUTRAL	WHITE
GREEN	GROUND	GREEN

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MECHANICAL/ELECTRICAL SPECIFICATIONS

FOR

FAIRFIELD TOWNSHIP SENIOR CENTER RENOVATIONS AND ADA IMPROVEMENTS

SITUATED AT

68 FAIRTON-GOULDTOWN RD.
BRIDGETON, NJ 08302

SCALE: AS NOTED
DATE: 1/15/2024
DRAWN BY: KJG
CHECKED BY: DJF
APPROVED BY: DAL SR

DWG NO.

M/E4

PART 3 - EXECUTION

3.1 INSTALLATION:

F. INSTALL EQUIPMENT/SYSTEM CIRCUIT/DEVICE IDENTIFICATION AS FOLLOWS:

1. APPLY EQUIPMENT IDENTIFICATION LABELS OF ENGRAVED PLASTIC-LAMINATE ON EACH MAJOR UNIT OF ELECTRICAL EQUIPMENT IN BUILDING, INCLUDING CENTRAL OR MASTER UNIT OF EACH ELECTRICAL SYSTEM. THIS INCLUDES COMMUNICATION/SIGNAL/ALARM SYSTEMS, UNLESS UNIT IS SPECIFIED WITH ITS OWN SELF-EXPLANATORY IDENTIFICATION. EXCEPT AS OTHERWISE INDICATED, PROVIDE SINGLE LINE OF TEST, WITH 1/2-INCH HIGH LETTERING ON 1 1/2-INCH LABEL (2-INCH HIGH WHERE TWO LINES ARE REQUIRED), WHITE LETTERING IN BLACK FIELD. TEXT SHALL MATCH TERMINOLOGY AND NUMBERING OF THE CONTRACT DOCUMENTS AND SHOP DRAWINGS. APPLY LABELS FOR EACH UNIT OF THE FOLLOWING CATEGORIES OF ELECTRICAL EQUIPMENT.

- PANELBOARDS, ELECTRICAL CABINETS, AND ENCLOSURES.
- ELECTRICAL SWITCHGEAR AND SWITCHBOARDS
- CONTACTORS.
- REMOTE-CONTROLLED SWITCHES.
- CONTROL DEVICES.

G. APPLY CIRCUIT/CONTROL/ITEM DESIGNATION LABELS OF ENGRAVED PLASTIC LAMINATE FOR DISCONNECT SWITCHES, BREAKERS, PUSHBUTTONS,, PILOT LIGHTS, MOTOR CONTROL CENTERS, AND SIMILAR ITEMS FOR POWER DISTRIBUTION AND CONTROL COMPONENTS ABOVE, EXCEPT PANELBOARDS AND ALARM/SIGNAL COMPONENTS, WHERE LABELING IS SPECIFIED ELSEWHERE. FOR PANELBOARDS, PROVIDE FRAMED, TYPED CIRCUIT SCHEDULES WITH EXPLICIT DESCRIPTION AND IDENTIFICATION OF ITEMS CONTROLLED BY EACH INDIVIDUAL BREAKER.

H. INSTALL LABELS AT LOCATIONS INDICATED AND AT LOCATIONS FOR BEST CONVENIENCE OF VIEWING WITHOUT INTERFERENCE WITH OPERATION AND MAINTENANCE OF EQUIPMENT.

SECTION 16452
GROUNDING

PART 1 - GENERAL

1.1 QUALITY ASSURANCE:

A. LISTING AND LABELING: PROVIDE PRODUCTS SPECIFIED IN THIS SECTION THAT ARE LISTED AND LABELED. THE TERMS "LISTED" AND "LABELED" SHALL BE DEFINED AS THEY ARE IN THE NATIONAL ELECTRICAL CODE, ARTICLE 100.

1. LISTING AND LABELING AGENCY QUALIFICATIONS: A "NATIONALLY RECOGNIZED TESTING LABORATORY" (NRTL) AS DEFINED IN OSHA REGULATION 1910.7.

B. ELECTRICAL COMPONENT STANDARD: COMPONENTS AND INSTALLATION SHALL COMPLY WITH NFPA 70, "NATIONAL ELECTRICAL CODE" (NEC).

C. UL STANDARD: COMPLY WITH UL 467, "GROUNDING AND BONDING EQUIPMENT".

PART 2 - PRODUCTS

2.1 GROUNDING AND BONDING PRODUCTS:

A. PRODUCTS: OF TYPES INDICATED AND OF SIZES AND RATINGS TO COMPLY WITH NEC. WHERE TYPES, SIZES, RATINGS, AND QUANTITIES INDICATED ARE IN EXCESS OF NEC REQUIREMENTS, THE MORE STRINGENT REQUIREMENTS AND THE GREATER SIZE, RATING, AND QUANTITY INDICATIONS GOVERN.

B. CONDUCTOR MATERIALS: COPPER.

1. WHERE ALUMINUM CONDUCTORS ARE USED FOR POWER WIRING, USE ALUMINUM FOR GROUNDING SYSTEM CONDUCTORS (EXCEPT PROVIDE COPPER FOR THOSE INSULATED AND UN-INSULATED CONDUCTORS IN DIRECT CONTRACT WITH EARTH, CONCRETE, OR CRUSHED STONE).

2.2 WIRE AN CABLE CONDUCTORS:

A. GENERAL: COMPLY WITH DIVISION 16 SECTION "WIRES AND CABLES." CONFORM TO NEC TABLE 8, EXCEPT AS OTHERWISE INDICATED, FOR CONDUCTOR PROPERTIES, INCLUDING STRANDING.

B. EQUIPMENT GROUNDING CONDUCTOR: GREEN INSULATED

C. GROUNDING ELECTRODE CONDUCTOR: STRANDED CABLE

D. BARE COPPER CONDUCTORS: CONFORM TO THE FOLLOWING:

1. SOLID CONDUCTORS: ASTM B-3.

2. ASSEMBLY OF STRANDED CONDUCTORS: ASTM B-8

3. TINNED CONDUCTORS: ASTM B-33

2.3 MISCELLANEOUS CONDUCTORS:

A. GROUND BUS: BARE ANNEALED COPPER BARS OF RECTANGULAR CROSS SECTION.

B. BRAIDED BONDING JUMPERS: COPPER TAPE, BRAIDED NO. 30 GAGE BARE COPPER WIRE, TERMINATED WITH COPPER FERRULES.

C. BONDING STRAP CONDUCTOR/CONNECTORS: SOFT COPPER, 0.05 INCH THICK AND 2 INCHES WIDE, EXCEPT AS INDICATED.

2.4 CONNECTOR PRODUCTS:

A. GENERAL: LISTED AND LABELED AS GROUNDING CONNECTORS FOR THE MATERIALS USED.

B. PRESSURE CONNECTORS: HIGH-CONDUCTIVITY-PLATED UNITS.

C. BOLTED CLAMPS: HEAVY-DUTY UNITS LISTED FOR THE APPLICATION.

D. EXOTHERMIC WELDED CONNECTIONS: PROVIDED IN KIT FORM AND SELECTED FOR THE SPECIFIC TYPES, SIZES, AND COMBINATIONS OF CONDUCTORS AND OTHER ITEMS TO BE CONNECTED.

E. ALUMINUM-TO-COPPER CONNECTIONS: BIMETALLIC TYPE, CONFORMING TO UL 96, "LIGHITING PROTECTION COMPONENT." OR UL 467.

2.5 GROUNDING ELECTRODES:

A. GROUND RODS: COPPER-CLAD STEEL WITH HIGH-STRENGTH STEEL CORE AND ELECTROLYTIC-GRADE COPPER OUTER SHEATH, MOLTEN WELDED CORE.

1. SIZE: 3/4 INCH BY 10 FEET.

2. SIZE: 5/8 INCH BY 8 FEET.

B. PLATE ELECTRODES: COPPER PLATES, MINIMUM 0.10 INCH THICK, SIZE AS INDICATED.

PART 3 - EXECUTION

3.1 APPLICATION:

A. EQUIPMENT GROUNDING CONDUCTOR APPLICATION: COMPLY WITH NEC ARTICLE 250 FOR SIZES AND QUANTITIES OF EQUIPMENT GROUNDING CONDUCTORS, EXCEPT WHERE LARGER SIZES OR MORE CONDUCTORS ARE INDICATED.

1. USE RACEWAY AS THE EQUIPMENT GROUND CONDUCTOR WHERE FEASIBLE AND PERMITTED BY NEC FOR THE FOLLOWING:

- FEEDERS AND BRANCH CIRCUITS EXCEPT AS OTHERWISE INDICATED.
- LIGHTING CIRCUITS.
- RECEPTACLE CIRCUITS.
- SINGLE-PHASE MOTOR OR APPLIANCE CIRCUITS.
- THREE-PHASE MOTOR OR APPLIANCE BRANCH CIRCUITS.

2. INSTALL SEPARATE INSULATED EQUIPMENT GROUNDING CONDUCTORS WITH CIRCUIT CONDUCTORS FOR THE FOLLOWING IN ADDITION TO THOSE LOCATIONS WHERE REQUIRED BY CODE:

- FEEDERS AND BRANCH CIRCUITS.
- LIGHTING CIRCUITS.
- RECEPTACLE CIRCUITS.
- SINGLE-PHASE MOTOR OR APPLIANCE CIRCUITS.
- THREE-PHASE MOTOR OR APPLIANCE BRANCH CIRCUITS.

3. BUSWAY CIRCUITS: INSTALL SEPARATE INSULATED EQUIPMENT GROUND CONDUCTOR FROM THE GROUND BUS IN THE SWITCHGEAR, SWITCHBOARD, OR DISTRIBUTION PANEL TO THE EQUIPMENT GROUND BAR TERMINAL ON THE BUSWAY.

4. COMPUTER PANEL CIRCUITS: INSTALL SEPARATE INSULATED EQUIPMENT GROUND WIRE IN BRANCH CIRCUITS FROM COMPUTER AREA POWER PANELS.

5. NONMETALLIC RACEWAYS: INSTALL AN INSULATED EQUIPMENT GROUND CONDUCTOR IN NONMETALLIC RACEWAYS UNLESS THEY ARE DESIGNATED FOR TELEPHONE OR DATA CABLES.

B. UNDERGROUND CONDUCTORS: BARE, STRANDED COPPER EXCEPT AS OTHERWISE INDICATED.

C. SIGNAL AND COMMUNICATIONS: FOR TELEPHONE, ALARM, AND COMMUNICATION SYSTEMS, PROVIDE A #4 AWG MINIMUM GREEN INSULATED COPPER CONDUCTOR IN RACEWAY FROM THE GROUNDING ELECTRODE SYSTEM TO EACH TERMINAL CABINET OR CENTRAL EQUIPMENT LOCATION.

D. SEPARATELY DERIVED SYSTEMS REQUIRED BY NEC TO BE GROUNDED SHALL BE GROUNDED IN ACCORDANCE WITH NEC PARAGRAPH 250-26.

E. METAL POLES SUPPORTING OUTDOOR LIGHTING FIXTURES: GROUND POLE TO A GROUNDING ELECTRODE AS INDICATED IN ADDITION TO SEPARATE EQUIPMENT GROUNDING CONDUCTOR RUN WITH SUPPLY BRANCH CIRCUIT.

F. CONNECTIONS TO LIGHTNING PROTECTION SYSTEM: BOND GROUNDING CONDUCTORS OR GROUNDING CONDUCTOR CONDUITS TO LIGHTNING PROTECTION DOWN CONDUCTORS OR GROUNDING CONDUCTORS IN COMPLIANCE WITH NFPA 78 "LIGHTNING PROTECTION CODE."

G. COMMON GROUND BONDING WITH LIGHTNING PROTECTION SYSTEM: BOND ELECTRIC POWER SYSTEM GROUND DIRECTLY TO LIGHTNING PROTECTION SYSTEM GROUNDING CONDUCTOR CLOSEST POINT TO ELECTRIC SERVICE GROUNDING ELECTRODE. USE BONDING CONDUCTOR SIZED SAME AS SYSTEM GROUND CONDUCTOR AND INSTALLED IN CONDUIT.

3.2 INSTALLATION:

A. GENERAL: GROUND ELECTRICAL SYSTEMS AND EQUIPMENT IN ACCORDANCE WITH NEC REQUIREMENTS EXCEPT WHERE THE DRAWINGS OR SPECIFICATIONS EXCEED NEC REQUIREMENTS.

B. ELECTRICAL ROOM GROUND BUS: SIZE, LOCATION, AND ARRANGEMENT AS INDICATED. SPACE 1 INCH FROM WALL AND SUPPORT FROM WALL 6 INCHES ABOVE FINISHED FLOOR, EXCEPT AS OTHERWISE INDICATED.

C. GROUND RODS: LOCATE A MINIMUM OF ONE-ROD LENGTH FROM EACH OTHER AND AT LEAST THE SAME DISTANCE FROM ANY OTHER GROUNDING ELECTRODE. INTERCONNECT GROUND RODS WITH BARE CONDUCTORS BURIED AT LEAST 24 INCHES BELOW GRADE. CONNECT BARE-CABLE GROUND CONDUCTORS TO GROUND RODS BY MEANS OF EXOTHERMIC WELDS EXCEPT AS OTHERWISE INDICATED. MAKE THESE CONNECTIONS WITHOUT DAMAGING THE COPPER COATING OR EXPOSING THE STEEL. USE 3/4-INCH BY 10-FT. GROUND RODS EXCEPT AS OTHERWISE INDICATED. DRIVE RODS UNTIL TOPS ARE 6 INCHES BELOW FINISHED FLOOR OR FINAL GRADE EXCEPT AS OTHERWISE INDICATED..

D. METALLIC WATER SERVICE PIPE: PROVIDE INSULATED COPPER GROUND CONDUCTORS, SIZED AS INDICATED, IN CONDUIT FORM THE BUILDING MAIN SERVICE EQUIPMENT, OR THE GROUND BUS, TO MAIN METALLIC WATER SERVICE ENTRANCES TO THE BUILDING. CONNECT GROUND CONDUCTORS TO THE MAIN METALLIC WATER SERVICE PIPES BY MEANS OF GROUND CLAMPS. WHERE A DIELECTRIC MAIN WATER FITTING IS INSTALLED, CONNECT THE GROUND CONDUCTOR TO THE STREET SIDE OF THE FITTING. DO NOT INSTALL A GROUNDING JUMPER AROUND DIELECTRIC FITTINGS. BOND THE GROUND CONDUCTOR CONDUIT TO THE CONDUCTOR AT EACH END.

E. BRAIDED-TYPE BONDING JUMPERS: INSTALL TO CONNECT GROUND CLAMPS ON WATER METER PIPING TO BYPASS WATER METERS ELECTRICALLY. USE ELSEWHERE FOR FLEXIBLE BONDING AND GROUNDING CONNECTIONS.

F. ROUTE GROUNDING CONDUCTORS ALONG SHORTEST AND STRAIGHTEST PATHS POSSIBLE WITHOUT OBSTRUCTING ACCESS OR PLACING CONDUCTORS WHERE THEY MAY BE SUBJECTED TO STRAIN, IMPACT, OR DAMAGE, EXCEPT AS INDICATED.

G. BOND INTERIOR METAL PIPING SYSTEMS AND METAL AIR DUCTS TO EQUIPMENT GROUND CONDUCTORS OF PUMP[S, FANS, ELECTRIC HEATERS, AND AIR CLEANERS SERVING INDIVIDUAL SYSTEMS.

H. TEST WELLS: LOCATE AS INDICATED, AND FABRICATE IN ACCORDANCE WITH DETAILS INDICATED.

3.3 CONNECTIONS:

A. GENERAL: MAKE CONNECTIONS IN SUCH A MANNER AS TO MINIMIZE POSSIBILITY OF GALVANIC ACTION OR ELECTROLYSIS. SELECT CONNECTORS, CONNECTION HARDWARE, CONDUCTORS, AND CONNECTION METHODS SO METALS IN DIRECT CONTACT WILL BE GALVANICALLY COMPATIBLE.

1. USE ELECTROPLATED OR HOT-TIN-COATED MATERIALS TO ASSURE HIGH CONDUCTIVITY AND MAKE CONTACT POINTS CLOSER IN ORDER OF GALVANIC SERIES.

2. MAKE CONNECTIONS WITH CLEAN BARE METAL AT POINTS OF CONTACT.

3. ALUMINUM TO STEEL CONNECTIONS SHALL BE WITH STAINLESS STEEL SEPARATORS AND MECHANICAL CLAMPS.

4. ALUMINUM TO GALVANIZED STEEL CONNECTIONS SHALL BE WITH TIN-PLATED COPPER JUMPERS AND MECHANICAL CLAMPS.

5. COAT AND SEAL CONNECTIONS INVOLVING DISSIMILAR METALS WITH INERT MATERIAL SUCH AS RED LEAD PAINT TO PREVENT FUTURE PENETRATION OF MOISTURE TO CONTACT SURFACES.

B. EXOTHERMIC WELDED CONNECTIONS: USE FOR CONNECTIONS TO STRUCTURAL STEEL AND FOR UNDERGROUND CONNECTIONS EXCEPT THOSE AT TEST WELLS. INSTALL AT CONNECTIONS TO GROUND RODS AND PLATE ELECTRODES. COMPLY WITH MANUFACTURER'S WRITTEN RECOMMENDATIONS. WELDS THAT ARE PUFFED UP OR THAT SHOW CONVEX SURFACES INDICATING IMPROPER CLEANING ARE NOT ACCEPTABLE.

C. TERMINATE INSULATED EQUIPMENT GROUNDING CONDUCTORS FOR FEEDERS AND BRANCH CIRCUITS WITH PRESSURE-TYPE GROUNDING LUGS. WHERE METALLIC RACEWAYS TERMINATE AT METALLIC HOUSINGS WITHOUT MECHANICAL AND ELECTRICAL CONNECTION TO THE HOUSING, TERMINATE EACH CONDUIT WITH A GROUNDING BUSHING. CONNECT GROUNDING BUSHINGS WITH A BARE GROUNDING CONDUCTOR TO THE GROUND BUS IN THE HOUSING. BOND ELECTRICALLY NON-CONTINUOUS CONDUITS AT BOTH ENTRANCES AND EXITS WITH GROUNDING BUSHINGS AND BARE GROUNDING CONDUCTORS.

D. TIGHTEN GROUNDING AND BONDING CONNECTORS AND TERMINALS, INCLUDING SCREWS AND BOLTS, IN ACCORDANCE WITH MANUFACTURER'S PUBLISHED TORQUE TIGHTENING VALUES FOR CONNECTORS AND BOLTS. WHERE MANUFACTURER'S TORQUING REQUIREMENTS ARE NOT INDICATED, TIGHTEN CONNECTIONS TO COMPLY WITH TORQUE TIGHTENING VALUES SPECIFIED IN UL 486A AND UL 486B.

E. CONNECTIONS AT TEST WELLS: USE COMPRESSION-TYPE CONNECTORS ON CONDUCTORS AND MAKE BOLTED AND CLAMPED-TYPE CONNECTIONS BETWEEN CONDUCTORS AND GROUND RODS.

F. COMPRESSION-TYPE CONNECTIONS: USE HYDRAULIC COMPRESSION TOOLS TO PROVIDE THE CORRECT CIRCUMFERENTIAL PRESSURE FOR COMPRESSION CONNECTORS. USE TOOLS AND DIES RECOMMENDED BY THE MANUFACTURER OF THE CONNECTORS. PROVIDE EMBOSSING DIE CODE OR OTHER STANDARD METHOD TO MAKE A VISIBLE INDICATION THAT A CONNECTOR HAS BEEN ADEQUATELY COMPRESSED ON THE GROUND CONDUCTOR.

G. MOISTURE PROTECTION: WHERE INSULATED GROUND CONDUCTORS ARE CONNECTED TO GROUND RODS OR GROUND BUSES, INSULATE THE ENTIRE AREA OF THE CONNECTION AND SEAL AGAINST MOISTURE PENETRATION OF THE INSULATION AND CABLE.

3.4 FIELD QUALITY CONTROL:

A. TESTS: SUBJECT THE COMPLETED GROUNDING SYSTEM TO A MEGGER TEST AT EACH LOCATION WHERE A MAXIMUM GROUND RESISTANCE LEVEL IS SPECIFIED, AT SERVICE DISCONNECT ENCLOSURE GROUND TERMINAL, AND AT GROUND TEST WELLS. MEASURE GROUND RESISTANCE WITHOUT THE SOIL BEING MOISTENED BY ANY MEANS OTHER THAN NATURAL PRECIPITATION OR NATURAL DRAINAGE OR SEEPAGE AND WITHOUT CHEMICAL TREATMENT OR OTHER ARTIFICIAL MEANS OF REDUCING NATURAL GROUND RESISTANCE. PERFORM TESTS BY THE 2-POINT METHOD IN ACCORDANCE WITH SECTION 9.03 OR IEEE 81, "GUIDE FOR MEASURING EARTH RESISTIVITY, GROUND IMPEDANCE AND EARTH SURFACE POTENTIALS OF A GROUNDING SYSTEM.."

B. GROUND/RESISTANCE MAXIMUM VALUES SHALL BE AS FOLLOWS:

1. EQUIPMENT RATED 500 KVA AND LESS: 10 OHMS

2. EQUIPMENT RATED 500 KVA TO 1000 KVA: 5 OHMS

3. EQUIPMENT RATED OVER 1000 KVA: 3 OHMS

4. UNFENCED SUBSTATIONS AND PAD-MOUNTED EQUIPMENT: 5 OHMS

5. MANHOLE GROUNDS: 10 OHMS

C. DEFICIENCIES: WHERE GROUND RESISTANCE EXCEED SPECIFIED VALUES, AND IF DIRECTED, MODIFY THE GROUNDING SYSTEM TO REDUCE RESISTANCE VALUES. WHERE MEASURES ARE DIRECTED THAT EXCEED THOSE INDICATED THE PROVISIONS OF THE CONTRACT, COVERING CHANGES WILL APPLY.

3.5 CLEANING AND ADJUSTING:

A. RESTORE SURFACE FEATURES AT AREAS DISTURBED BY EXCAVATION AND RE-ESTABLISH ORIGINAL GRADES EXCEPT AS OTHERWISE INDICATED. WHERE SOD HAS BEEN REMOVED, REPLACE IT AS SOON AS POSSIBLE AFTER BACKFILLING IS COMPLETED. RESTORE AREAS DISTURBED BY TRENCHING, STORING OF DIRT CABLE LAYING, AND OTHER WORK TO THEIR ORIGINAL CONDITION. INCLUDE NECESSARY TOPSOILING, FERTILIZING, LIMING, SEEDING, SODDING, SPRIGGING, OR MULCHING. PERFORM SUCH WORK IN ACCORDANCE WITH DIVISION 2 SECTION "LANDSCAPE WORK". MAINTAIN DISTURBED SURFACES. RESTORE VEGETATION IN ACCORDANCE WITH SECTION "LANDSCAPE WORK." RESTORE DISTURBED PAVING AS INDICATED.

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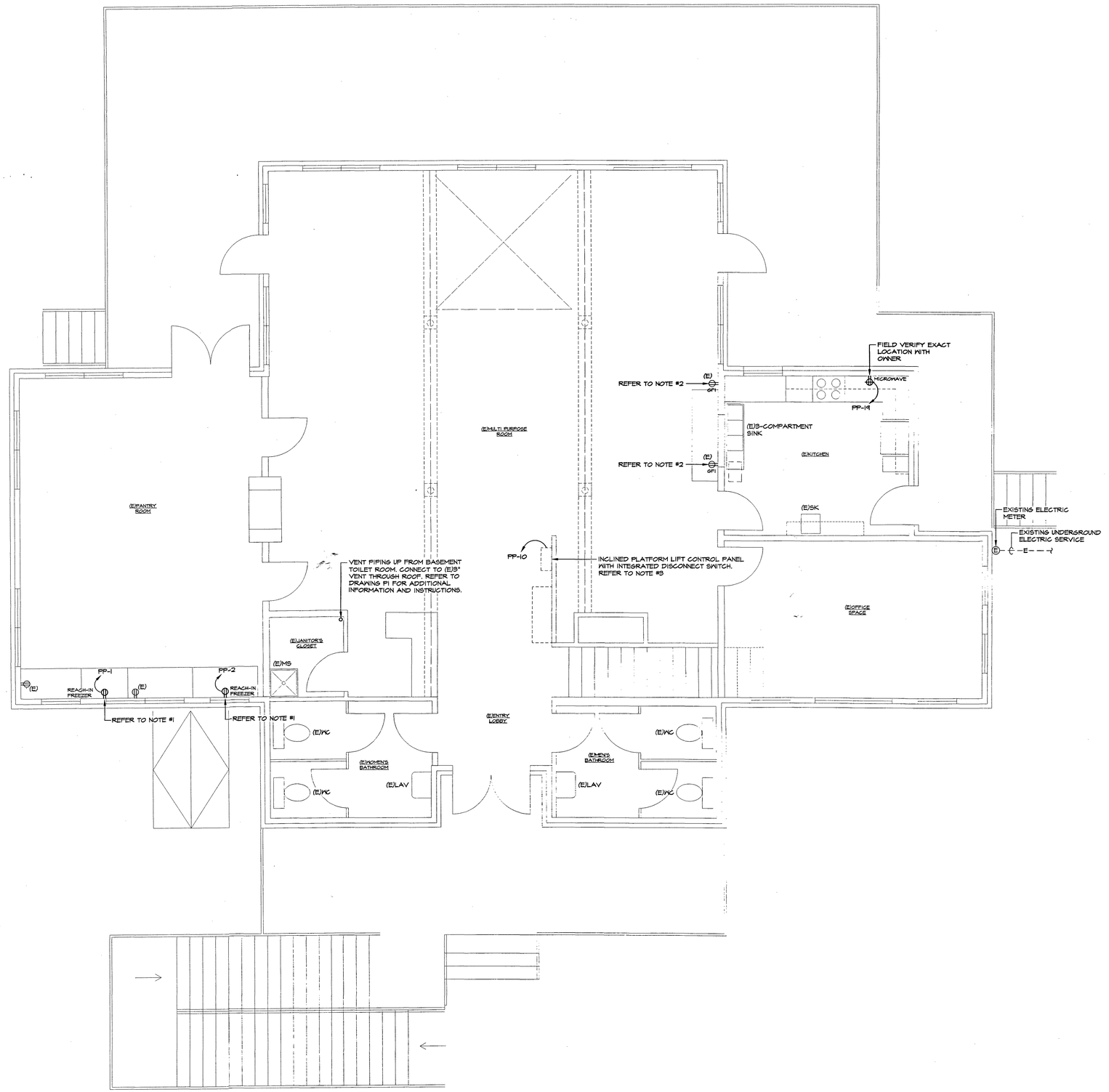

UPPER LEVEL MECHANICAL/ELECTRICAL PLAN
SCALE: 1/4" = 1'-0"

LEGEND

	SPECIFICATION GRADE DUPLEX RECEPTACLE
▽	DATA JACK
	CCTV SECURITY CAMERA
(E)	ELECTRIC METER
(H)	HEAT DETECTOR
(S)	SMOKE DETECTOR
(E)	EXISTING TO REMAIN UNLESS OTHERWISE NOTED

NOTES:

1. PROVIDE POWER FOR (2) REACH-IN FREEZERS RELOCATED FROM BASEMENT. FIELD VERIFY EXACT LOCATION WITH ARCHITECT/OWNER.
2. EXISTING DUPLEX RECEPTACLE TO BE RAISED TO COUNTERTOP HEIGHT. PROVIDE NEW BACK BOX, RECEPTACLE, AND COVER PLATE. EXTEND (E)2#12 WITH GROUND WIRING TO NEW RECEPTACLE AND MAKE CONNECTION.
   - ALL SPLICE SHALL BE MADE IN AN APPROVED, ACCESSIBLE JUNCTION BOX.
   - UPGRADE DEVICE TO GFCI TYPE.
3. CONTRACTOR SHALL PROVIDED ALL ELECTRICAL REQUIREMENTS IN STRICT COMPLIANCE WITH THE INCLINED PLATFORM LIFT MANUFACTURER'S SUBMITTAL/SHOP DRAWING. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO OBTAIN AN APPROVED COPY OF THE MANUFACTURE'S DOCUMENTS AND COORDINATE ALL WORK.

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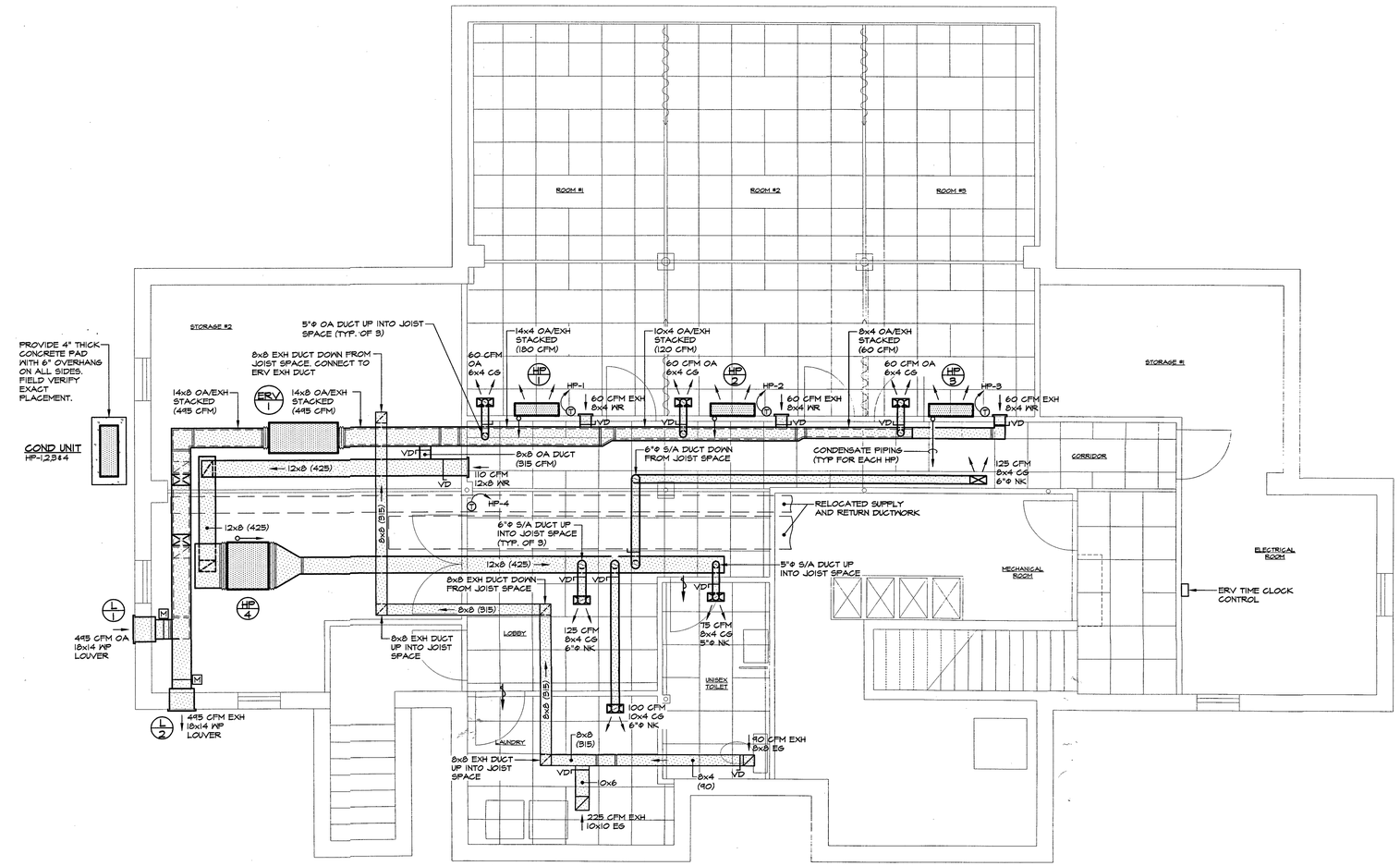
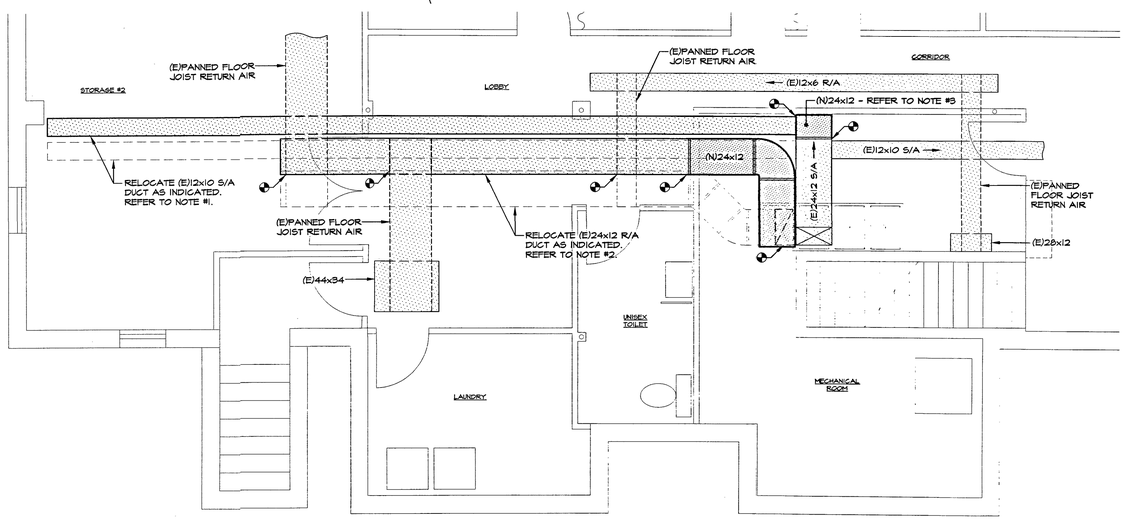
DWG. NO.
M/E6



MECHANICAL FLOOR PLAN

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



EXISTING DUCTWORK MODIFICATIONS PLAN

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

LEGEND

	SUPPLY AIR DUCTWORK
	RETURN AIR DUCTWORK
	EXISTING SUPPLY / RETURN DUCTWORK
	NEW SUPPLY / RETURN DUCTWORK
	NEW EXHAUST DUCTWORK
VD	45° ENTRY TYPE BRANCH TAKEOFF WITH VOLUME DAMPER
VD	VOLUME DAMPER
	DOOR UNDERCUTTING OR LOUVER
T	THERMOSTAT

ABBREVIATIONS

CFM	CUBIC FEET PER MINUTE
CG	CEILING GRILLE
(E)	EXISTING TO REMAIN UNLESS OTHERWISE NOTED
EG	EXHAUST GRILLE
EXH	EXHAUST
FPM	FEET PER MINUTE
NK	NECK SIZE OF AIR TERMINAL
OA	OUTSIDE AIR
R/A	RETURN AIR
S/A	SUPPLY AIR
WG	WALL GRILLE
WR	WALL RETURN

NOTES:

1. EXISTING 12x10 SUPPLY AIR DUCTWORK TO BE RELOCATED AS INDICATED. THE INTENT IS TO PROVIDE CLEARANCE FOR THE NEW SUPPLY AIR MAIN AND BRANCH DUCTWORK FROM VRF-4.
   - DUCTWORK SHALL BE RUN TIGHT AGAINST THE EXISTING DROP BEAM.
   - MODIFY/EXTEND EXISTING BRANCH DUCTS AS NEEDED AND MAKE CONNECTION TO RELOCATED DUCT MAIN. FIELD VERIFY EXACT LOCATIONS, SIZES AND QUANTITIES.
2. EXISTING 24x12 RETURN AIR DUCTWORK TO BE RELOCATED AS INDICATED. THE INTENT IS TO PROVIDE CLEARANCE FOR THE NEW SUPPLY AIR MAIN AND BRANCH DUCTWORK FROM VRF-4.
   - DUCTWORK SHALL BE RUN TIGHT AGAINST RELOCATED 12x10 SUPPLY AIR DUCTWORK.
   - MODIFY/EXTEND EXISTING PANNED FLOOR JOIST RETURN AIR AS NEEDED AND MAKE CONNECTION TO RELOCATED DUCT MAIN. FIELD VERIFY EXACT SIZES.
3. EXTEND EXISTING 24x12 SUPPLY AIR MAIN DUCT AS NEEDED TO PROVIDE FOR CONNECTION OF RELOCATED 12x10 SUPPLY AIR DUCTWORK.
4. CONTRACTOR SHALL PROVIDE CONDENSATE PIPING FROM EACH HP UNIT. RUN PIPING TO NEW OPEN HUB IN MECHANICAL ROOM (COORDINATE WITH PLUMBING CONTRACTOR).
   - CONDENSATE PIPING SHALL BE RIGID PIPE. TUBING IS NOT ACCEPTABLE.
5. ALL EQUIPMENT AND ANCILLARY COMPONENTS OF THE HVAC SYSTEMS SHALL BE INSTALLED TO PROVIDE MAXIMUM HEAD ROOM.
   - FIELD COORDINATE WITH ALL TRADES.
   - MOUNT HP 1, 2 AND 3 AT HEIGHT RECOMMENDED BY THE EQUIPMENT MANUFACTURER.
6. PROVIDE STAINLESS STEEL MESH COVER OVER ALL OPEN OUTSIDE AIR AND RETURN AIR DUCTS.

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SUBMISSION:

12/13/2023	REVIEW/COORDINATION
12/30/2023	BIDDING
1/15/2024	PERMITS
4/23/2024	REDESIGN FOR REVIEW/ COORDINATION
4/26/2024	REVISION 1 REVISED FOR RE-ISSUE

NJ PROFESSIONAL ENGINEER No. 24GE03595900
NY PROFESSIONAL ENGINEER No. 102401942
DE PROFESSIONAL ENGINEER No. 17464
MD PROFESSIONAL ENGINEER No. 0883281
VA PROFESSIONAL ENGINEER No. 0402061
CT PROFESSIONAL ENGINEER No. 0031563
FL PROFESSIONAL ENGINEER No. 71264

Daniel A. Loveland Sr., P.E.
Lead AP

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MECHANICAL FLOOR PLAN
FOR
FAIRFIELD TOWNSHIP SENIOR CENTER
RENOVATIONS AND ADA IMPROVEMENTS
SITUATED AT
68 FAIRTON-GOULDTOWN RD.
BRIDGETON, NJ 08302

SCALE:	AS NOTED
DATE:	1/15/2024
DRAWN BY:	K.JG
CHECKED BY:	DJF
APPROVED BY:	DAL SR

DWG. NO.

M1

ENERGY RECOVERY VENTILATOR SCHEDULE

SYMBOL	MANUFACTURE MODEL NO.	SUPPLY CFM	EXHAUST CFM	SUPPLY RPM	EXHAUST RPM	S.P.	SUPPLY HP	EXHAUST HP	EFFECTIVENESS		SA TEMP. °F		SA RH %		ELECTRIC				REMARKS
									SUMMER	WINTER	SUMMER	WINTER	SUMMER	WINTER	VOLT	PHASE	MCA	MOCP	
ERV 1	COOK ERV-500	445	445	1121	1235	0.25	0.5	0.5	72.2%	78.2%	78.3	56.8	51.4	44.5	115	1	20.75	25	REFER TO NOTES

NOTE:

1. PROVIDE WITH THE FOLLOWING ACCESSORIES:
   - FAN SPEED CONTROLLER, 10A SET OF 2
   - FLEX DUCT CONNECTION - EXHAUST AIR DISCHARGE
   - FLEX DUCT CONNECTION - SUPPLY AIR DISCHARGE
   - FLEX DUCT CONNECTION - RETURN AIR INTAKE
   - FLEX DUCT CONNECTION - OUTDOOR AIR INTAKE

2. SEQUENCE OF OPERATION:
   - ERV SHALL BE WIRED THROUGH 7 DAY PROGRAMMABLE DIGITAL TIME CLOCK SET TO ENERGIZE THE ERV DURING OCCUPIED HOURS. COORDINATE SCHEDULE WITH OWNER.
   - LOCATE TIME CLOCK IN ELECTRIC ROOM. LABEL "ERV CONTROL".

DUCTLESS SPLIT SYSTEM SCHEDULE

UNIT	MANUFACTURE MODEL NO. INDOOR	COOLING CAPACITY BTUH	HEATING CAPACITY BTUH	CFM LOW-HIGH	POWER - INDOOR			MANUFACTURE MODEL NO. OUTDOOR	SEER2	HSPF2	POWER - OUTDOOR				REMARKS
					VOLT	Φ	WATTS				VOLT	Φ	MCA	MOCP	
HP 1	SAMSUNG AR12CSFCMAKNCV	12,000	12,000	246-378	208	1	27	SAMSUNG AJ048BXJ3CH/AA	21.0	9.0	240	1	37.0	40	SEE NOTES
HP 2	SAMSUNG AR12CSFCMAKNCV	12,000	12,000	246-378	208	1	27								
HP 3	SAMSUNG AR12CSFCMAKNCV	12,000	12,000	246-378	208	1	27								
HP 4	SAMSUNG AJ012BNHDCH/AA	12,000	14,000	258-349	208	1	153								

NOTES:

1. PROVIDE LOCKABLE METAL, VENTED, THERMOSTAT COVERS FOR ALL THERMOSTATS.
2. INDOOR UNITS RECEIVE POWER FROM OUTDOOR UNIT THROUGH FIELD SUPPLIED INTERCONNECTED WIRING.
3. PROVIDE CONDENSATE PUMP REFCO GOBI II MODEL #3004045 (HP-1,2&3)
4. UNIT IS PROVIDED WITH BUILT IN CONDENSATE PUMP WITH MAXIMUM 29" LIFT, CHECK VALVE, AND FLOAT SWITCH THAT DISABLES INDOOR UNIT DURING OVERFLOW DETECTION (HP-4)
5. PROVIDE WITH WIND BAFFLES MODEL #MBF-IM2 (FRONT) AND #MBB-2M-B (BACK)
6. PROVIDE WITH ADVANCED WIRED CONTROLLER MODEL #MWR-WS00UN

LOUVER SCHEDULE

SYMBOL	MANUFACTURER/ MODEL #	LENGTH	WIDTH	HEIGHT	AIRFLOW		PRESSURE IN.WG.	FREE AREA		TYPE	REMARKS
		DEPTH			CFM	FPM		SQ.FT.	%		
L 1	FOTTORFF EDD-445	4"	18"	14"	495	917	0.13	0.5	52.9	INTAKE	REFER TO NOTES
L 2	FOTTORFF EDD-445	4"	18"	14"	495	917	0.14	0.5	52.9	EXHAUST	REFER TO NOTES

NOTES:

1. LOUVERS SHALL CONSIST OF THE FOLLOWING:
   - MATERIAL: MILL FINISH 6063-T5 EXTRUDED ALUMINUM
   - FRAME: 4" DEEP CHANNEL
   - BLADES: 45° DUAL-DRAINABLE
   - SCREEN: 1/2" X 0.063" ALUMINUM
   - FINISH: BAKED ENAMEL - SELECTION BY OWNER/ARCHITECT
2. PROVIDE WITH POTTORFF TRIPLE-V BLADE CONTROL DAMPER MODEL #CD-41 AND BELIMO ACTUATOR MODEL #TFB SERIES, PROVIDE VOLTAGE AS INDICATED ON PLAN. DAMPERS SHALL OPEN FULLY PRIOR TO OPERATION OF ERV.
3. PROVIDE WITH OPTIONAL BURGLAR BARS - 1/2" DIA. ZINC-PLATED BARS, 6" ON CENTER

DIFFUSERS AND GRILLES

CONTRACTOR SHALL PROVIDE THE FOLLOWING DIFFUSERS AND GRILLES OR EQUAL:

CG - TITUS MODEL 30RS SINGLE DEFLECTION
RR - TITUS MODEL 350RL 35° FIXED DEFLECTION, 3/4" SPACING
ES - TITUS MODEL 350RL 35° FIXED DEFLECTION, 1/2" SPACING

NOTES:

1. ALL GRILLES & REGISTERS ARE STEEL HEAVY DUTY CONSTRUCTION.
2. SIZES & CFM RATINGS SHALL BE AS SHOWN ON THE DRAWINGS.
3. VERIFY & PROVIDE BORDER TYPE REQUIRED FOR ALL DIFFUSERS AND GRILLES LOCATIONS
4. CONTRACTOR SHALL PROVIDE INCREASER/DECREASER AT POINT OF CONNECTION WHERE PLAN INDICATES BRANCH DUCT SIZES OTHER THAN AS SPECIFIED IN SCHEDULE.

VENTILATION RATE SCHEDULE

ZONE	PEOPLE OA CFM/PERSON (Rp)	× ZONE POPULATION (Pz)	+ AREA OA CFM/SF (Ra)	× ZONE SF FLOOR AREA (Az)	= AIRFLOW BREATHING ZONE (Vbz) CFM	EXHAUST AIR CFM
HP-1						
ROOM #1	5	6	.06	279	47 CFM	--
ZONE OUTDOOR AIR FLOW (Voz = Vbz / Ez): = 47 CFM / 1 = 47 CFM Voz (HEATING AND COOLING)						
SYSTEM OUTDOOR AIR FLOW (Vot = Voz): 47 CFM Vot = 47 Voz						
60 CFM PROVIDE THROUGH ERV-1						
HP-2						
ROOM #2	5	6	.06	272	46 CFM	--
ZONE OUTDOOR AIR FLOW (Voz = Vbz / Ez): = 46 CFM / 1 = 46 CFM Voz (HEATING AND COOLING)						
SYSTEM OUTDOOR AIR FLOW (Vot = Voz): 46 CFM Vot = 46 Voz						
60 CFM PROVIDE THROUGH ERV-1						
HP-3						
ROOM #3	5	6	.06	242	45 CFM	--
ZONE OUTDOOR AIR FLOW (Voz = Vbz / Ez): = 45 CFM / 1 = 45 CFM Voz (HEATING AND COOLING)						
SYSTEM OUTDOOR AIR FLOW (Vot = Voz): 45 CFM Vot = 45 Voz						
60 CFM PROVIDE THROUGH ERV-1						
HP-4						
LOBBY/COORIDOR	--	--	.06	361	22 CFM	--
LAUNDRY	--	--	.06	89	5 CFM	225 CFM
UNISEX TOILET	--	--	--	77	--	90 CFM
				TOTAL	27 CFM	315 CFM
ZONE OUTDOOR AIR FLOW (Voz = Vbz / Ez): = 27 CFM / 1 = 27 CFM Voz (HEATING AND COOLING)						
SYSTEM OUTDOOR AIR FLOW (Vot = Voz): 27 CFM Vot = 27 Voz						
315 CFM PROVIDE THROUGH ERV-1						

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NJ PROFESSIONAL ENGINEER No. 24GE03949500
DE PROFESSIONAL ENGINEER No. 27847
DE PROFESSIONAL ENGINEER No. 17464
MD PROFESSIONAL ENGINEER No. 36281
CT PROFESSIONAL ENGINEER No. 0034563
MD PROFESSIONAL ENGINEER No. 36281
FL PROFESSIONAL ENGINEER No. 71354

Daniel A. Loveland Sr., P.E.
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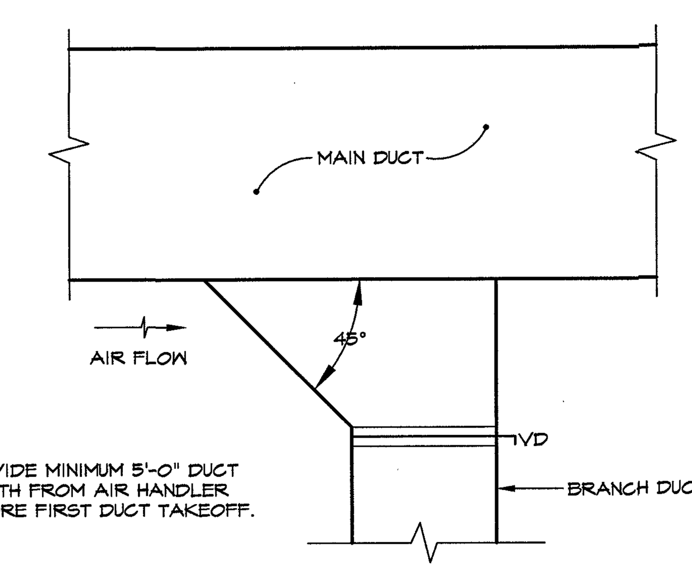
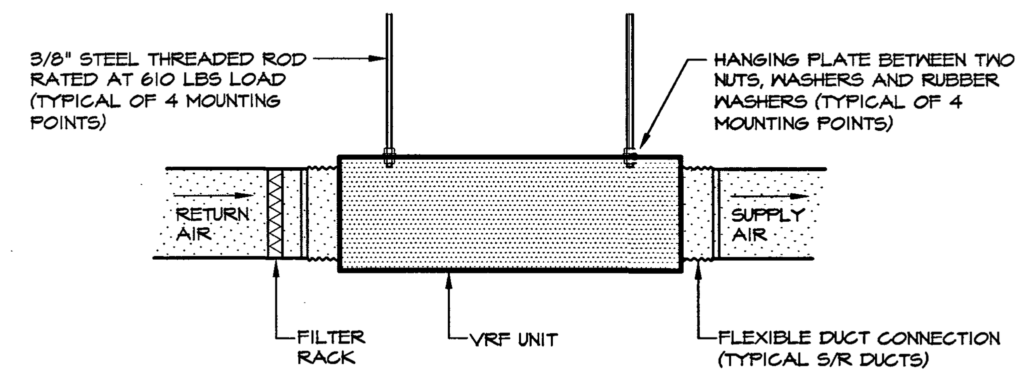


NOTE:
1. PROVIDE MINIMUM 5'-0" DUCT LENGTH FROM AIR HANDLER BEFORE FIRST DUCT TAKEOFF.

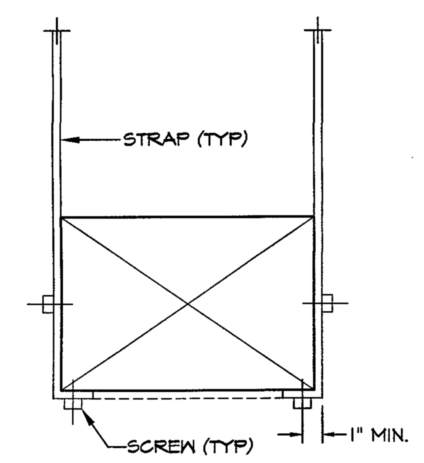
TYPICAL RECTANGULAR DUCT TAKEOFF DETAIL

N.T.S.



VRF UNIT INSTALLATION DETAIL

N.T.S.



STRAP HANGER

RECTANGULAR DUCT HANGER				
HALF OF DUCT PERIMETER (IN)	GALVANIZED STRAPS (SEE DETAILS BELOW) MINIMUM WIDTH x THICKNESS (IN)			
	MAXIMUM HANGER SPACING (FT)			
	10	8	5	4
<30	1 x 0.0296	1 x 0.0296	1 x 0.0296	1 x 0.0296
72	1 x 0.0466	1 x 0.0356	1 x 0.0296	1 x 0.0296
96	1 x 0.0575	1 x 0.0466	1 x 0.0356	1 x 0.0296
120	1 1/2 x 0.0575	1 x 0.0575	1 x 0.0466	1 x 0.0356
168	1 1/2 x 0.0575	1 x 0.0575	1 x 0.0575	1 x 0.0466
192	-	1 1/2 x 0.0575	1 x 0.0575	1 x 0.0575

RECTANGULAR DUCT HANGER DETAIL

N.T.S.

MECHANICAL GENERAL NOTES

SCOPE

1. PROVIDE ALL MATERIALS AND EQUIPMENT INDICATED ON THESE DRAWINGS. THE CONTRACTOR IS RESPONSIBLE FOR ALL MATERIALS AND LABOR TO SATISFY A COMPLETE AND WORKING SYSTEM WHETHER SPECIFIED OR IMPLIED.
2. WORK TO BE PERFORMED UNDER THE MECHANICAL SPECIFICATIONS AND DRAWINGS CONSISTS OF FURNISHING ALL LABOR AND MATERIAL FOR THE INDICATED SPACE INCLUDING BUT NOT LIMITED TO:

   HP SYSTEM AND ACCESSORIES
   ENERGY RECOVERY SYSTEM
   AUTOMATIC TEMPERATURE CONTROLS
   DUCTWORK, DIFFUSERS, AND ACCESSORIES
3. CONTRACTOR SHALL COORDINATE ALL WORK WITH OTHER TRADES TO AVOID CONFLICT AND TO FACILITATE THE WORK WITHOUT CAUSING UNNECESSARY DELAYS. IMMEDIATELY REPORT ANY DISCREPANCIES, IN WRITING, TO THE ENGINEER. ALL CHANGES AND/OR ALTERATIONS REQUIRE REVIEW AND APPROVAL BY THE ENGINEER.

GENERAL

1. ALL DESIGN PROFESSIONALS, CONSULTANTS, CONTRACTORS AND SUB-CONTRACTORS PERFORMING WORK ON THIS PROJECT SHALL BE FULLY RESPONSIBLE FOR THE PROPER PERFORMANCE OF THEIR WORK, COORDINATION WITH OTHER CONSULTANTS AND TRADESPEOPLE, MEANS AND METHODS OF CONSTRUCTION, JOB SAFETY AND SECURITY. MPE CONSULTING AND DESIGN LLC INCLUDING ITS AGENTS AND EMPLOYEES ARE NOT RESPONSIBLE OR LIABLE IN ANY WAY FOR THE ABOVE AND SHALL BE HELD HARMLESS AND INDEMNIFIED BY ALL PARTIES FROM ALL CLAIMS, LOSSES, SUITS, AND LEGAL ACTION WHATSOEVER, ARISING FROM THE PERFORMANCE OF WORK ON THE PROJECT.
2. CONTRACTOR SHALL BE RESPONSIBLE FOR EXAMINATION OF ALL EXISTING EQUIPMENT, DUCTWORK, PIPES, AND ANCILLARY COMPONENTS TO ENSURE SAFETY AND SUITABILITY FOR CONTINUED USE WHEN APPLICABLE. IMMEDIATELY REPORT ANY DISCREPANCIES OR DEFICIENCIES TO THE OWNER, GENERAL CONTRACTOR, AND ENGINEER'S OFFICE BEFORE PROCEEDING WITH WORK.
3. CONTRACTOR SHALL PROVIDE FOR FIELD VERIFICATION AND COORDINATION OF ALL DIMENSIONS AND CONDITIONS PRIOR TO MATERIAL PROCUREMENT AND/OR FABRICATION. THIS CONTRACTOR SHALL BE RESPONSIBLE FOR COORDINATION WITH ALL OTHER TRADES INVOLVED. PROVIDE FOR ALL FIELD MODIFICATIONS SUCH AS OFFSETS IN PIPING OR DUCTWORK AS NEEDED TO AVOID CONFLICT WITH ANY AND ALL OBSTRUCTIONS AND/OR INTERFERENCES THAT MAY AFFECT THE LAYOUT INDICATED ON THESE DRAWINGS. NO ADDITIONAL COST TO THE CONTRACTOR WILL BE GRANTED FOR THIS WORK.
4. ALL EQUIPMENT SHALL BE INSTALLED IN A WORKMAN LIKE MANNER, MEETING THE ACCEPTED STANDARDS OF THE HVAC INDUSTRY. WORK SHALL BE PERFORMED BY FIRMS AND CRAFTSMAN REGULARLY ENGAGING IN WORK OF THIS NATURE.
5. ALL MATERIALS AND EQUIPMENT SHALL BE NEW AND SHALL BE OF THE TYPE AND CAPACITIES INDICATED ON THE DRAWINGS, OR APPROVED EQUAL AND/OR SUBSTITUTIONS.
6. ALL EQUIPMENT AND MATERIALS PROVIDED UNDER THESE SPECIFICATIONS SHALL BE LIMITED TO PRODUCTS REGULARLY PRODUCED AND RECOMMENDED FOR THE PROPOSED SERVICE.
7. SUBSTITUTIONS AND/OR EQUAL PRODUCTS MUST BE APPROVED IN WRITING BY THE ENGINEER PRIOR TO INSTALLATION.
8. GUARANTEE IN WRITING ALL MATERIALS, EQUIPMENT, AND WORKMANSHIP FOR A PERIOD OF ONE YEAR FROM THE DATE OF OWNER'S ACCEPTANCE. GUARANTEE SHALL BE UNCONDITIONAL.
9. DO NOT SCALE THIS DRAWING FOR EXACT DIMENSIONS. VERIFY ALL FIGURES, CONDITIONS, DIMENSIONS, ETC. AT THE JOB SITE.
10. ALL EXTERIOR WALL OPENINGS TO BE PROPERLY CAULKED AND SEALED WITH LOW VOLATILE ORGANIC COMPOUND SEALANT TO PREVENT INFILTRATION OF OUTSIDE AIR INTO ROOMS.
11. LOCATIONS OF EXISTING EQUIPMENT, INCLUDING PIPING, DUCTWORK, DIFFUSERS, AND REGISTERS, HAVE BEEN TAKEN FROM THE BEST AVAILABLE INFORMATION. THE DRAWINGS ARE INTENDED TO BE USED FOR INFORMATIONAL PURPOSES ONLY. THE CONTRACTOR IS NOT TO SCALE DRAWINGS OR ASSUME THAT ALL EQUIPMENT IS SHOWN. THE CONTRACTOR SHALL VISIT THE SITE TO DETERMINE THE TOTAL EXTENT OF REMOVALS AND NEW WORK AS DIAGRAMMED ON THE PLANS. EXTRA COMPENSATION FOR FAILURE TO COMPLY WITH THE ABOVE STATEMENTS WILL NOT BE CONSIDERED.
12. CONTRACTORS SHALL VISIT THE PROJECT PRIOR TO SUBMITTAL OF PROPOSAL AND THOROUGHLY FAMILIARIZE THEMSELVES WITH EXISTING CONDITIONS AND CONDITIONS THAT WILL AFFECT THE PERFORMANCE OF THEIR WORK. FAILURE TO DO SO WILL NOT ENTITLE THEM TO ANY ADDITIONAL COMPENSATION FOR PROVIDING A COMPLETE AND APPROVED SYSTEM.
13. CONTRACTOR SHALL REFER TO ALL DRAWINGS FOR INFORMATION, SPECIFICATIONS, AND/OR INSTRUCTIONS RELATIVE TO THE PROJECT SCOPE OF WORK AND PROVIDE WORK/COORDINATION REQUIRED TO FACILITATE OTHER CONTRACTORS.
14. THERMOSTATS SHALL BE MOUNTED SO THAT OPERABLE PARTS ARE LOCATED NO HIGHER THAN 48" ABOVE FINISHED FLOOR. IF THE REACH IS OVER AN OBSTRUCTION BETWEEN 20" AND 25" IN DEPTH THE MAXIMUM HEIGHT SHALL BE 46".
15. CONTRACTOR SHALL PROVIDE LOCKABLE METAL, VENTED, THERMOSTAT COVERS FOR ALL THERMOSTATS.

DEMOLITION

1. CONTRACTOR IS RESPONSIBLE FOR SELECTIVE DEMOLITION IN ALL AREAS AS REQUIRED TO ACCOMMODATE THE PROJECT SCOPE OF WORK. ALL SYSTEMS AND ANCILLARY COMPONENTS MADE OBSOLETE SHALL BE COMPLETELY REMOVED AND DISPOSED. INSTALL BY-PASS WHERE REQUIRED TO MAINTAIN THE INTEGRITY OF OVERALL SYSTEMS REMAINING AND SERVING AREAS OUTSIDE THE SCOPE OF WORK AREA.
2. CONTRACTOR SHALL PERFORM A SITE INSPECTION TO ESTABLISH EXTENT OF DEMOLITION PRIOR TO BID.

CODES AND STANDARDS

1. ALL WORK SHALL BE PERFORMED IN STRICT COMPLIANCE WITH THE 2021 EDITION OF INTERNATIONAL MECHANICAL CODE, NFPA, SMACNA, LOCAL CODES, AND REGULATIONS GOVERNING WORK OF THIS NATURE.
2. CONTRACTOR SHALL SECURE ALL PERMITS OR APPLICATIONS, AND PAY ANY AND ALL FEES AS REQUIRED.

BRAND NAMES, STANDARDS OF QUALITY AND PERFORMANCE

1. BRAND NAMES AND/OR DESCRIPTIONS USED IN THESE DOCUMENTS ARE TO ACQUAINT THE BIDDERS WITH THE TYPES OF MATERIALS/EQUIPMENT DESIRED AND WILL BE USED AS A STANDARD BY WHICH MATERIALS/EQUIPMENT OFFERED AS EQUIVALENT WILL BE EVALUATED.
2. THE LISTED BRANDS SHALL SERVE AS A REFERENCE OR POINT OF COMPARISON FOR FUNCTION OR OPERATIONAL CHARACTERISTICS DESIRED FOR THE MATERIAL/EQUIPMENT BEING REQUESTED. WHERE BIDDER SUBMITS AN EQUIVALENT, IT SHALL BE THE RESPONSIBILITY OF THE BIDDER TO DOCUMENT THE EQUIVALENT CLAIM. FAILURE TO SUBMIT SUCH DOCUMENTATION SHALL BE GROUNDS FOR REJECTION OF THE CLAIM OF EQUIVALENT.
3. SUBSTITUTES AND "OR EQUAL" SUBMISSIONS MUST BE APPROVED IN WRITING BY ENGINEER PRIOR TO SUBMISSION OF BID.

SUBMITTALS

1. SUBMIT MANUFACTURES LITERATURE TO ENGINEERS OFFICE WHICH INDICATES THAT THE EQUIPMENT MEETS REQUIREMENTS OF THESE DRAWINGS AND SPECIFICATIONS. SUBMITTALS SHALL INCLUDE BUT NOT BE LIMITED TO THE FOLLOWING:
   - HEAT PUMP SYSTEM
   - ENERGY RECOVERY VENTILATOR
   - DIFFUSERS/GRILLES
   - DUCTWORK AND ACCESSORIES
   - DUCT SHOP DRAWINGS
   - CONTROLS
   - WALL-MOUNTED REFRIGERANT PIPE OUTLET AND UV/VAPOR PIPING INSULATION PROTECTOR
2. SUBMIT THREE SETS 1/4" SCALE SHOP DRAWINGS OF DUCTWORK AFTER COORDINATION WITH FINAL STRUCTURAL DRAWINGS AND OTHER TRADES THAT MAYBE AFFECTED BY THIS WORK. DRAWINGS SHALL CLEARLY INDICATE CHANGES AND/OR ALTERATIONS TO THE DESIGN DOCUMENTS. ENGINEER SHALL REVIEW AND APPROVE DRAWINGS PRIOR TO COMMENCING WORK.

COORDINATION

1. THIS CONTRACTOR SHALL COORDINATE ALL WORK WITH A COMPLETE SET OF M/P/E AND ARCHITECTURAL DESIGN DRAWINGS. IMMEDIATELY REPORT ANY DISCREPANCIES TO THE ENGINEERS OFFICE.
2. CONTRACTOR IS TO COORDINATE AND PROVIDE FOR INTERIOR WALL OPENINGS FOR DUCT PENETRATIONS.
3. CONTRACTOR IS TO COORDINATE WITH ELECTRICAL CONTRACTOR FOR LOCATION OF WIRING FOR EACH HVAC UNIT.
4. CONTRACTOR SHALL COORDINATE AND PROVIDE FOR UNDERCUTTING AND/OR LOUVER DOOR AS INDICATED TO ALLOW ADEQUATE AIR RETURN TO AIR HANDLING UNIT.
5. CONTRACTOR TO SUPPLY AND INSTALL ALL CONTROL WIRING AND THERMOSTATS AS REQUIRED.
6. CONTRACTOR SHALL PROVIDE 4" THICK CONCRETE PADS WITH 6" OVERHANG ON ALL SIDES FOR ALL CONDENSER UNITS.

CONDENSATE

1. MECHANICAL CONTRACTOR SHALL PROVIDE ALL CONDENSATE PIPING AS FOLLOWS:
   - HVAC - TO POINT OF DISCHARGE AS INDICATED ON THE DRAWINGS. PROVIDE CONDENSATE PUMP WHERE NEEDED.
2. CONDENSATE PIPING SHALL BE "FlowGaurd Gold" PLENUM RATED CPVC PIPE AND FITTINGS IN ACCORDANCE WITH ASTM E 84 WITH A FLAME SPREAD INDEX OF 5 AND A SMOKE DEVELOPED INDEX OF 25. THE USE OF TUBING IS PROHIBITED.
3. CONDENSATE WASTE PIPING SHALL BE SLOPED NOT LESS THAN 1/8" PER FOOT. DRAINAGE FITTINGS SHALL BE USED IN SIZES 1 1/4" AND LARGER. MINIMUM PIPE SIZING SHALL BE AS FOLLOWS:

   3/4" PIPE SIZE THROUGH 3-TON COOLING CAPACITY
   1" PIPE SIZE THROUGH 20-TON COOLING CAPACITY
   1 1/4" PIPE SIZE THROUGH 100-TON COOLING CAPACITY
   1 1/2" PIPE SIZE THROUGH 300-TON COOLING CAPACITY
   2" PIPE SIZE THROUGH 600-TON COOLING CAPACITY

HEATING, VENTILATION, AIR CONDITIONING UNITS

1. EQUIPMENT MUST BE PURCHASED THROUGH THE LOCAL FACTORY AUTHORIZED COMMERCIAL SALES OFFICE ONLY. UNITS PURCHASED THROUGH RESIDENTIAL OR WHOLESALE DISTRIBUTORS WILL NOT BE ACCEPTED.
2. CONTRACTOR SHALL INSTALL ALL HVAC EQUIPMENT IN STRICT COMPLIANCE WITH MANUFACTURES RECOMMENDATIONS AS PROVIDED BY THE WRITTEN INSTALLATION GUIDE LINES. THERE SHALL BE NO EXCEPTIONS UNLESS WRITTEN APPROVAL IS GIVEN BY THE ENGINEERS OFFICE PRIOR TO BID.
3. PROVIDE AND INSTALL UNITS INDICATED ON DRAWINGS AND SCHEDULES. UNITS SHALL INCLUDE APPURTENANCES NECESSARY FOR COMPLETE AND PROPER INSTALLATION.
4. PROVIDE VIBRATION ISOLATION ON ALL HVAC EQUIPMENT. INSTALL IN ACCORDANCE WITH MANUFACTURERS REQUIREMENTS.
4 PROVIDE MANUFACTURERS STANDARD WARRANTY ON UNITS INCLUDING A MINIMUM 5 YEAR COMPRESSOR WARRANTY.
5. DURING CONSTRUCTION; COMPLETELY SEAL FORCED AIR DUCTS AND HVAC EQUIPMENT OPENINGS WITH PLASTIC FILM AND TAPE UNTIL AFTER FINAL CLEANING OF UNITS. INSTALL (1) AND PROVIDE (2) SETS OF FARR 30/30 OR EQUAL MEDIUM EFFICIENCY PLEATED DISPOSABLE FILTERS AT THE COMPLETION OF THE PROJECT.
   - HVAC UNITS SHALL NOT BE USED AS TEMPORARY HVAC DURING CONSTRUCTION.
6. CONTRACTOR SHALL PROVIDE AND INSTALL REFRIGERATION PIPING IN ACCORDANCE WITH THE MANUFACTURERS RECOMMENDATIONS AND IN SUCH A WAY AS TO BE INCONSPICUOUS AND INSULATED TO PREVENT CONDENSATION.
7. CONTRACTOR SHALL PROVIDE AIREX MANUFACTURING INC. PRO-SYSTEM KIT MODEL #TGS-6XXW-72X-W FOR ALL REFRIGERANT PIPING EXTERIOR WALL PENETRATIONS. KIT INCLUDES WALL-MOUNTED PIPE OUTLET AND UV/VAPOR PIPING INSULATION PROTECTOR. CONTRACTOR SHALL BE RESPONSIBLE FOR VERIFYING KIT SIZE BASED ON HVAC SYSTEM PIPE SIZES.

DUCTWORK

1. SMOOTH TURN RADIUS DUCTWORK OF DOUBLE THICKNESS TURNING VANES SHALL BE USED THROUGHOUT WHERE FLOW EXCEEDS 500 CFM.
2. ALL JOINTS TO BE SEALED WITH DUCT MASTIC AND TAPE IN ACCORDANCE WITH SMACNA STANDARDS.
3. ALL DUCT DIMENSIONS SHOWN ARE NET INSIDE VALUES. DIMENSIONS MAY BE CHANGED AS LONG AS NET FREE FACE AREA IS MAINTAINED.
4. SUPPORT DUCTWORK AT A MAXIMUM INTERVAL OF 16'-0" AND NO MORE THAN 2'-0" FROM FITTINGS AND BRANCH TAKEOFFS.
5. BRANCH DUCT SIZES SHALL MATCH DIFFUSER/GRILLE NECK (NK) DIMENSION UNLESS OTHERWISE NOTED.
6. ALL BRANCH DUCTS SHALL HAVE A VOLUME DAMPER.
7. ALL BRANCH DUCT TAKEOFFS SHALL BE MADE WITH 45° ENTRY TYPE FITTINGS.
8. USE OF "FLEX" DUCTWORK IS NOT PERMITTED.
9. FLEX DUCT AND FLEX DUCT CONNECTOR SYSTEMS SHALL BE UL 181 LISTED.
10. CONTRACTOR SHALL PROVIDE AND INSTALL FLEXIBLE DUCT CONNECTIONS IN SUPPLY AND RETURN AIR DUCTWORK AT AIR HANDLERS.

INSULATION

1. EXCEPT WHERE OTHERWISE NOTED; CONCEALED SUPPLY / RETURN / OUTSIDE AIR DUCTWORK SHALL BE WRAPPED WITH "Reflectic" DUCT INSULATION TO PROVIDE A MINIMUM INSTALLED R VALUE OF 6.0 WITH A 0.75" AIR GAP BETWEEN THE DUCT AND THE INSULATION. MAINTAIN CONTINUOUS VAPOR BARRIER TO PREVENT CONDENSATION. INSULATION SHALL HAVE A FLAME SPREAD RATING OF 25 AND SMOKE DEVELOPED RATING OF 50.
2. REFRIGERANT PIPING SHALL BE INSULATED WITH A MINIMUM 1/2" ARMACELL "AP ArmaFlex Black LapSeal". PROVIDE WITH "WB" FINISH FOR OUTDOOR USE.
3. THE USE OF LINED DUCT IS NOT PERMITTED.

MECHANICAL EQUIPMENT IDENTIFICATION

1. PROVIDE STENCILED PIPE MARKERS OR PLASTIC TAPE TO IDENTIFY AIR SUPPLY, RETURN, EXHAUST, INTAKE DUCTWORK INCLUDE DIRECTION OF AIR FLOW.
2. LOCATE MARKERS AT EACH BRANCH TAKE OFF AND NEAR MAJOR EQUIPMENT. MAXIMUM SPACE INTERVALS SHALL NOT EXCEED 25'-0".
3. INSTALL ENGRAVED PLASTIC LAMINATE SIGN ON EACH MAJOR ITEM OF MECHANICAL EQUIPMENT AND EACH OPERATING DEVICE.

TESTING AND BALANCING AIR SYSTEMS

1. CONTRACTOR SHALL PROVIDE FOR BALANCING OF AIR SYSTEMS TO ACHIEVE VALUES SHOWN ON THE DRAWINGS.
2. BALANCING AGENCY SHALL BE CERTIFIED BY THE NATIONAL ENVIRONMENTAL BALANCING BUREAU (NEBB) OF BY ASSOCIATED AIR BALANCE COUNCIL (AABC). AGENCY SHALL HAVE AT LEAST ONE (1) PROFESSIONAL ENGINEER REGISTERED IN THE STATE IN WHICH SERVICES ARE TO BE PERFORMED, CERTIFIED BY NEBB OR AABC AS A TEST AND BALANCE ENGINEER.
3. PROVIDE DOCUMENTATION TO ENGINEER'S OFFICE FOR REVIEW AND APPROVAL, INDICATING RESULTING AIR FLOWS FROM PERFORMANCE OF BALANCING. REBALANCE SYSTEM AS REQUIRED TO SATISFY SYSTEM REQUIREMENTS.

FIRESTOP

1. PENETRATIONS FOR CABLES, CABLETRAYS, CONDUITS, PIPES, TUBES, COMBUSTION VENTS, AND EXHAUST VENTS, WIRES, AND SIMILAR ITEMS TO ACCOMMODATE ELECTRICAL, MECHANICAL, PLUMBING, AND COMMUNICATIONS SYSTEMS THAT PASS THROUGH A WALL, FLOOR, OR FLOOR/CEILING ASSEMBLY CONSTRUCTED AS A FIRE BARRIER SHALL BE PROTECTED BY A FIRESTOP SYSTEM OR DEVICE. THE FIRESTOP SYSTEM OR DEVICE SHALL BE TESTED IN ACCORDANCE WITH ASTM E 814 OR ANSI / UL 1479.

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Daniel A. Loveland Sr., P.E.
Leed A-P
DATE: ______

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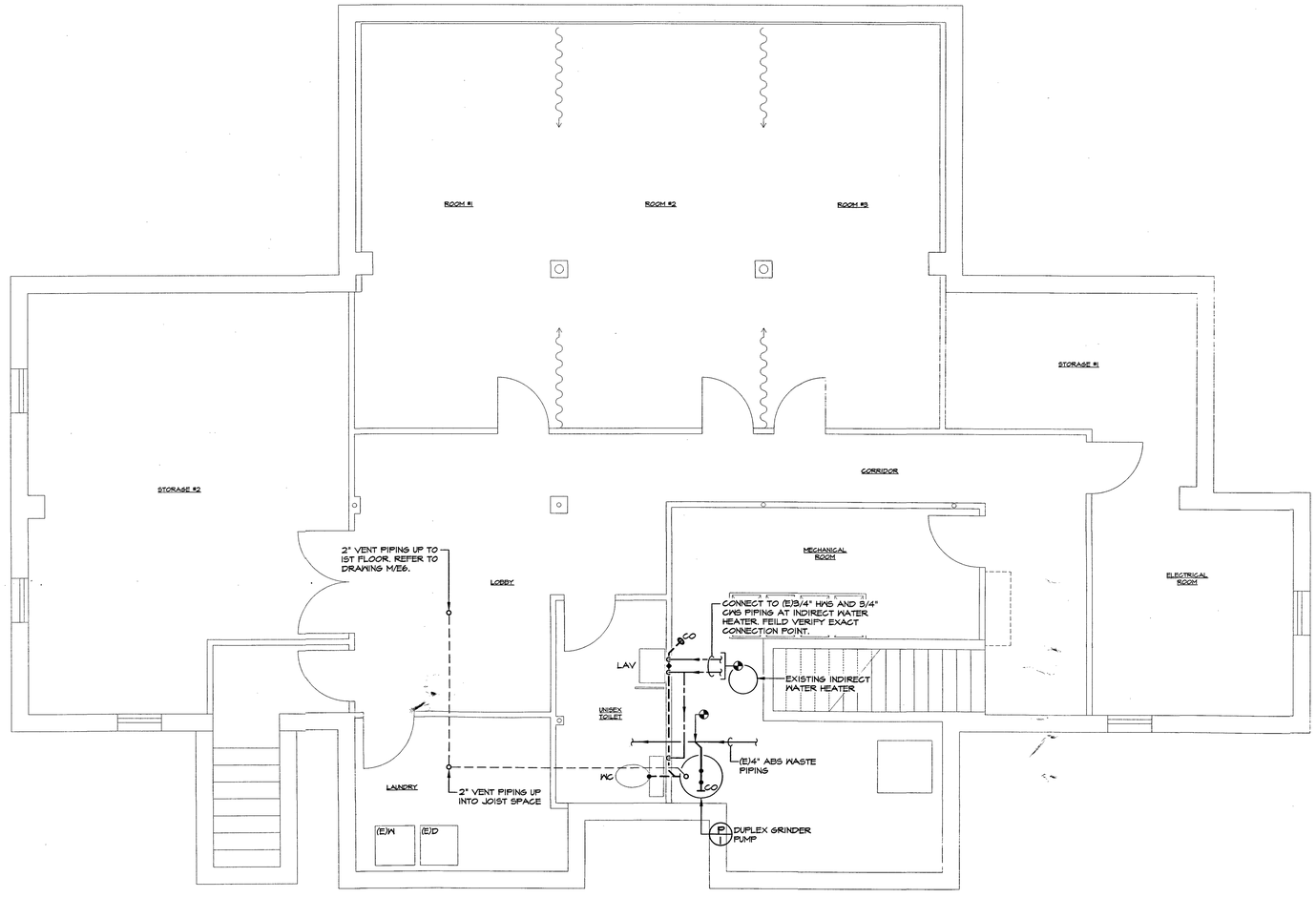
MECHANICAL NOTES AND SCHEDULES
FOR
FAIRFIELD TOWNSHIP SENIOR CENTER RENOVATIONS AND ADA IMPROVEMENTS
SITUATED AT
68 FAIRTON-GOULDTOWN RD.
BRIDGETON, NJ 08302

SCALE: AS NOTED
DATE: 1/15/2024
DRAWN BY: KJG
CHECKED BY: DJF
APPROVED BY: DAL SR

DWG NO.
M3



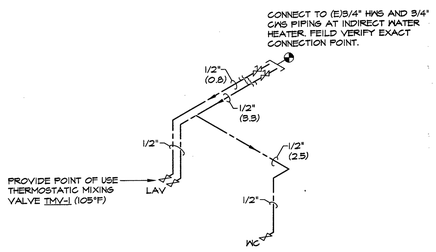
PLUMBING FLOOR PLAN
SCALE: 1/4" = 1'-0"

LEGEND

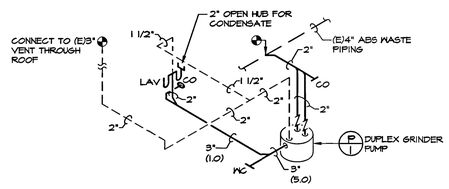
———	EXISTING WASTE PIPING
— — — —	EXISTING COLD WATER SUPPLY
----·---·----	EXISTING HOT WATER SUPPLY
———	WASTE PIPING
—·—·—·—	COLD WATER SUPPLY
----·---·----	HOT WATER SUPPLY
- - - - - -	VENT PIPING
——— CO	CLEANOUT
——— ⊖ CO	CLEANOUT WITH FLUSH COVER
⋈	BALL VALVE SHUTOFF
⋈	FIXTURE STOP
●	CONNECTION POINT BETWEEN NEW AND EXISTING

ABBREVIATIONS SCHEDULE

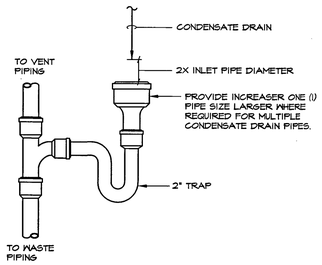
CWS	COLD WATER SUPPLY
(E)	EXISTING TO REMAIN UNLESS OTHERWISE NOTED
HWS	HOT WATER SUPPLY
LAV	LAVATORY
VTR	VENT THROUGH ROOF
WC	WATER CLOSET



WATER PIPING RISER DIAGRAM
N.T.S.



WASTE PIPING RISER DIAGRAM
N.T.S.



OPEN DRAIN ABOVE CEILING
N.T.S.

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FL PROFESSIONAL ENGINEER No. 71364

Daniel A. Loveland Sr., P.E.
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PLUMBING FLOOR PLAN AND RISER DIAGRAMS

FOR

FAIRFIELD TOWNSHIP SENIOR CENTER
RENOVATIONS AND ADA IMPROVEMENTS

SITUATED AT:
68 FAIRTON-GOULDTOWN RD.
BRIDGETON, NJ 08302

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P1

PLUMBING FIXTURE SCHEDULE

SYMBOL	TYPE OF EQUIPMENT	MANUF./MODEL#	DRAIN	VTR	HWS	CWS	SFU	DFU	DESCRIPTIONS
LAV	BARRIER FREE LAVATORY	AMERICAN STANDARD #0321.026	1 1/4"	1 1/4"	1/2"	1/2"	1.0	1.0	VITREUOS CHINA, WALL HUNG, FAUCET HOLES @ 4" CENTERS, PROVIDE AMERICAN STANDARD FAUCET #7025.105/702P.400 BATTERY OPERATED
WC	BARRIER FREE WATER CLOSET	AMERICAN STANDARD #2467.016	3"	1 1/2"	-	1/2"	2.5	4.0	17" AQUA-SAVER PRESSURE ASSIST 1.6 GALLON ELONGATED RIM, TWO PIECE W/ SEAT #5901.100
CO	CLEANOUT	ZURN #Z1400	--	--	--	--	--	--	DURA-COATED CAST IRON CLEANOUT WITH ROUND ADJUSTABLE SCORIATED SECURED NICKEL BRONZE TOP

THERMOSTATIC MIXING VALVE SCHEDULE

SYMBOL	MANUFACTURER/ MODEL #	TEMPERATURE RANGE	TEMPERATURE SETPOINT	MAXIMUM PRESSURE (PSI)	MAX. FLOW (GPM)	MIN. FLOW (GPM)	REMARKS
TMV-1	LEONARD 170A-LF-BP-BRKT-CP	95°F-120°F	105°F	125	4.0	0.25	LOCKABLE SETTING CSA, ASSE AGENCY APPROVAL.

PUMP SCHEDULE

SYMBOL	MANUFACTURER/ MODEL No.	INLET	DISCHARGE	VENT	BASIN CAPACITY	PANEL MODEL No.	VOLT	PHASE	HP	AMPS	REMARKS
P/1	LIBERTY PUMPS P682XPRG101	3"	(2)2"	2"	46 GAL.	PDC-115	115	1	1	12.0	FACTORY PRE-ASSEMBLED DUPLEX GRINDER PACKAGE

PLUMBING GENERAL NOTES

SCOPE

1. THE WORK TO BE PERFORMED UNDER THE PLUMBING PLANS AND SPECIFICATIONS CONSISTS OF FURNISHING ALL MATERIAL AND LABOR FOR THE COMPLETE INSTALLATION OF ALL PLUMBING SYSTEMS. THE WORK SHALL INCLUDE BUT NOT LIMITED TO THE FOLLOWING:

   A. COLD AND HOT WATER SYSTEMS
   B. DRAINAGE AND VENT SYSTEMS
   C. INSULATION

2. CONTRACTOR SHALL COORDINATE ALL WORK WITH OTHER TRADES TO AVOID CONFLICT AND TO FACILITATE THE WORK WITHOUT CAUSING UNNECESSARY DELAYS. IMMEDIATELY REPORT ANY DISCREPANCIES, IN WRITING, TO THE ENGINEER. ALL CHANGES AND/OR ALTERATIONS REQUIRE REVIEW AND APPROVAL BY THE ENGINEER.

3. CONTRACTOR SHALL INSTALL PLUMBING EQUIPMENT IN STRICT COMPLIANCE WITH THE MANUFACTURES WRITTEN RECOMMENDATIONS AND INSTRUCTIONS.

GENERAL

1. ALL DESIGN PROFESSIONALS, CONSULTANTS, CONTRACTORS AND SUB-CONTRACTORS PERFORMING WORK ON THIS PROJECT SHALL BE FULLY RESPONSIBLE FOR THE PROPER PERFORMANCE OF THEIR WORK, COORDINATION WITH OTHER CONSULTANTS AND TRADESPEOPLE, MEANS AND METHODS OF CONSTRUCTION, JOB SAFETY AND SECURITY. MPE CONSULTING AND DESIGN LLC INCLUDING ITS AGENTS AND EMPLOYEES ARE NOT RESPONSIBLE OR LIABLE IN ANY WAY FOR THE ABOVE AND SHALL BE HELD HARMLESS AND INDEMNIFIED BY ALL PARTIES FROM ALL CLAIMS, LOSSES, SUITS, AND LEGAL ACTION WHATSOEVER, ARISING FROM THE PERFORMANCE OF WORK ON THE PROJECT.

2. THE CONTRACTOR SHALL EXAMINE ALL EXISTING EQUIPMENT, PIPES, VALVES AND ANCILLARY COMPONENTS TO ENSURE SAFETY AND SUITABILITY FOR CONTINUED USE. IMMEDIATELY REPORT ANY DISCREPANCIES OR DEFICIENCIES TO THE OWNER, GENERAL CONTRACTOR AND ENGINEER'S OFFICE BEFORE PROCEEDING WITH THE WORK.

3. CONTRACTOR SHALL PROVIDE FOR FIELD VERIFICATION AND COORDINATION OF ALL DIMENSIONS AND CONDITIONS PRIOR TO MATERIAL PROCUREMENT AND/OR FABRICATION. THIS CONTRACTOR SHALL BE RESPONSIBLE FOR COORDINATION WITH ALL OTHER TRADES INVOLVED. PROVIDE FOR ALL FIELD MODIFICATIONS SUCH AS OFFSETS IN PIPING AS NEEDED TO AVOID CONFLICT WITH ANY AND ALL OBSTRUCTIONS AND/OR INTERFERENCES THAT MAY AFFECT THE LAYOUT INDICATED ON THESE DRAWINGS. NO ADDITIONAL COST TO THE CONTRACTOR WILL BE GRANTED FOR THIS WORK.

4. DO NOT SCALE THIS DRAWING FOR EXACT DIMENSIONS. VERIFY ALL FIGURES, CONDITIONS, DIMENSIONS, ETC. AT THE JOB SITE.

5. LOCATIONS OF EXISTING EQUIPMENT, PIPING, VENTS, ETC. HAVE BEEN TAKEN FROM BEST AVAILABLE INFORMATION. THE DRAWINGS ARE INTENDED TO BE USED FOR INFORMATIONAL PURPOSES ONLY. THE CONTRACTOR IS NOT TO SCALE DRAWINGS OR ASSUME THAT ALL COMPONENTS ARE SHOWN. HE SHALL VISIT THE SITE TO DETERMINE THE TOTAL EXTENT OF REMOVALS AND NEW WORK AS DIAGRAMMED ON THE PLANS. EXTRA COMPENSATION FOR FAILURE TO COMPLY WITH THE ABOVE STATEMENT WILL NOT BE CONSIDERED.

6. THIS CONTRACTOR SHALL COORDINATE ALL WORK WITH A COMPLETE SET OF M/P/E AND ARCHITECTURAL DESIGN DRAWINGS IF APPLICABLE. IMMEDIATELY REPORT ANY DISCREPANCIES TO THE ENGINEERS OFFICE.

7. THE CONTRACTOR SHALL SECURE ALL PERMITS OR APPLICATIONS AND PAY ANY AND ALL FEES REQUIRED.

8. ALL PLUMBING FIXTURES SHALL BE SEPARATELY VALVED.

9. ALL WATER BRANCHES AND RISERS SHALL BE SEPARATELY VALVED.

10. CONTRACTOR SHALL PROVIDE AND INSTALL ALL HOT & COLD WATER CONNECTIONS TO THE PLUMBING FIXTURES.

11. CONTRACTOR SHALL PROVIDE FOR SAW CUTTING, EXCAVATION, BACKFILL AND RESTORATION TO MATCH EXISTING CONDITIONS AS NEEDED FOR PROPERLY EXECUTING THE PLUMBING SCOPE OF WORK.
    - CONTRACTOR SHALL PROVIDE FOR ANY AND ALL UNDERGROUND INVESTIGATION INCLUDING BUT NOT LIMITED TO X-RAY OF FLOOR AS NEEDED TO DETERMINE EXISTING CONDITIONS PRIOR TO CUTTING AND EXCAVATION.

CODES AND STANDARDS

1. ALL PLUMBING WORK IS TO BE PERFORMED IN STRICT COMPLIANCE WITH THE 2021 NEW JERSEY EDITION OF THE NATIONAL STANDARD PLUMBING CODE, ALL LOCAL CODES, AND ALL OTHER REGULATION GOVERNING WORK OF THIS NATURE.

2. THIS CONTRACTOR IS RESPONSIBLE FOR ALL WORK MATERIALS AND LABOR TO SATISFY A COMPLETE AND WORKING SYSTEM WHETHER SPECIFIED OR IMPLIED.

DEMOLITION

1. CONTRACTOR IS RESPONSIBLE FOR SELECTIVE DEMOLITION IN ALL AREAS AS REQUIRED TO ACCOMMODATE THE PROJECT SCOPE OF WORK. ALL SYSTEMS AND ANCILLARY COMPONENTS MADE OBSOLETE SHALL BE COMPLETELY REMOVED AND DISPOSED. INSTALL BY-PASS WHERE REQUIRED TO MAINTAIN THE INTEGRITY OF OVERALL SYSTEMS REMAINING AND SERVING AREAS OUTSIDE THE SCOPE OF WORK AREA.

2. CONTRACTOR SHALL PERFORM A SITE INSPECTION TO ESTABLISH EXTENT OF DEMOLITION PRIOR TO BID.

IDENTIFICATION

1. PROVIDE STENCILED PIPE MARKERS OR PLASTIC TAPE WITH COLOR COMPLYING WITH ANSI A13.1 INCLUDE DIRECTION OF FLOW.

2. LOCATE MARKERS NEAR VALVES, EACH BRANCH TAKE OFF AND NEAR MAJOR EQUIPMENT. MAXIMUM SPACE INTERVALS SHALL NOT EXCEED 50'-0".

BRAND NAMES, STANDARDS OF QUALITY AND PERFORMANCE

1. BRAND NAMES AND/OR DESCRIPTIONS USED IN THESE DOCUMENTS ARE TO ACQUAINT THE BIDDERS WITH THE TYPES OF MATERIALS/EQUIPMENT DESIRED AND WILL BE USED AS A STANDARD BY WHICH MATERIALS/EQUIPMENT OFFERED AS EQUIVALENT WILL BE EVALUATED.

2. THE LISTED BRANDS SHALL SERVE AS A REFERENCE OR POINT OF COMPARISON FOR FUNCTION OR OPERATIONAL CHARACTERISTICS DESIRED FOR THE MATERIAL/EQUIPMENT BEING REQUESTED. WHERE BIDDER SUBMITS AN EQUIVALENT, IT SHALL BE THE RESPONSIBILITY OF THE BIDDER TO DOCUMENT THE EQUIVALENT CLAIM. FAILURE TO SUBMIT SUCH DOCUMENTATION SHALL BE GROUNDS FOR REJECTION OF THE CLAIM OF EQUIVALENT.

3. SUBSTITUTES AND "OR EQUAL" SUBMISSIONS MUST BE APPROVED IN WRITING BY ENGINEER PRIOR TO SUBMISSION OF BID.

SUBMITTALS

1. SUBMIT MANUFACTURES LITERATURE TO ENGINEERS OFFICE WHICH INDICATES THAT THE EQUIPMENT MEETS REQUIREMENTS OF THESE DRAWINGS AND SPECIFICATIONS. SUBMITTALS SHALL INCLUDE BUT NOT BE LIMITED TO:
   - PLUMBING FIXTURES
   - PUMPS
   - PIPING AND ACCESSORIES
   - INSULATION

SOIL WASTE AND VENT PIPING

1. SOIL WASTE PIPING AND FITTINGS SHALL BE ABS, SCHEDULE 40 DWV.

2. VENT PIPING AND FITTINGS SHALL BE ABS, SCHEDULE 40 DWV.

3. ALL VENT PIPING SHALL HAVE A MINIMUM SLOPE OF 1/4" PER FOOT AND SHALL DRAIN TO FIXTURES.

4. ALL WASTE PIPING SHALL SLOPE AS FOLLOWS:
   3" AND SMALLER SHALL HAVE A SLOPE OF 1/4" PER FOOT
   4" AND LARGER SHALL HAVE A SLOPE OF 1/8" PER FOOT

5. SUPPORT PIPING AT MAXIMUM 4'-0" INTERVALS.

INSULATION

1. ALL HOT AND COLD WATER PIPING TO BE INSULATED WITH A MINIMUM OF 1" FIBERGLASS JACKETED INSULATION (ASTM C547, CLASS 1) WITH A FLAME SPREAD RATING OF 25 AND SMOKE DEVELOPED RATING OF 50.

2. PROVIDE 2" FIBERGLASS INSULATION ON COLD WATER PIPING CONCEALED IN ATTICS, EXTERIOR WALLS AND IN CRAWL SPACES.

WATER PIPING

1. DOMESTIC WATER PIPING SHALL BE TYPE "L" COPPER TUBING ABOVE GROUND OR TYPE "K" BELOW GROUND WITH SOLDERED JOINTS USING LEAD FREE SOLDER, PROPERLY CLEANED, USING AN APPROVED FLUX.

2. SUPPORT PIPING AT MAXIMUM 5'-0" INTERVALS FOR PIPING UP TO 2" AND AT 8'-0" INTERVALS FOR 2 1/2" AND UP.

3. DOMESTIC HOT WATER TEMPERATURES SHALL BE AS FOLLOWS:
   - HAND WASHING FACILITIES - 105°F

4. PROVIDE POINT OF USE THERMOSTATIC MIXING VALVES AS INDICATED. MAXIMUM SET POINT SHALL BE 105°F.
   - LAVATORIES IN TOILET ROOMS

5. ALL WATER PIPING SHALL BE INSTALLED BELOW BUILDING ENVELOPE INSULATION WITHIN CONDITIONED SPACE. PROVIDE HEAT TRACE WHERE THIS REQUIREMENT CAN NOT BE ACHIEVED. COORDINATE WITH ELECTRICAL CONTRACTOR AND PROVIDE FOR POWER CIRCUIT AS NEEDED.

ESCUTCHEONS

1. ALL EXPOSED PIPES EXCEPT AS OTHERWISE DESCRIBED PASSING THROUGH WALLS, FLOORS, CEILING, ETC. IN FINISHED SPACES SHALL BE PROVIDED WITH SOLID PATTERN BRASS CHROME PLATED ESCUTCHEONS WITH SET SCREW.

BARRIER FREE REQUIREMENT

1. ALL EXPOSED WASTE AND WATER PIPING WITHIN A BARRIER FREE BATHROOM SHALL BE INSULATED WITH A PRODUCT EQUAL TO IPS CORP. "TRUEBRO" LAV GUARD 2 UNDERSINK PROTECTIVE PIPE COVERS WITH INTERNAL, EZ TEAR-TO-FIT TRIM FEATURE FOR SQUARE CLEAN TRIMMING, INTERNAL RIBS AND BUILT-IN, CONCEALED E-Z GRIP FASTENERS (NO CABLE TIE FASTENERS ALLOWED).

FIRESTOP

1. PENETRATIONS FOR CABLES, CABLETRAYS, CONDUITS, PIPES, TUBES, COMBUSTION VENTS, AND EXHAUST VENTS, WIRES, AND SIMILAR ITEMS TO ACCOMMODATE ELECTRICAL, MECHANICAL, PLUMBING, AND COMMUNICATIONS SYSTEMS THAT PASS THROUGH A WALL, FLOOR, OR FLOOR/CEILING ASSEMBLY CONSTRUCTED AS A FIRE BARRIER SHALL BE PROTECTED BY A FIRESTOP SYSTEM OR DEVICE. THE FIRESTOP SYSTEM OR DEVICE SHALL BE TESTED IN ACCORDANCE WITH ASTM E 814 OR ANSI / UL 1479.

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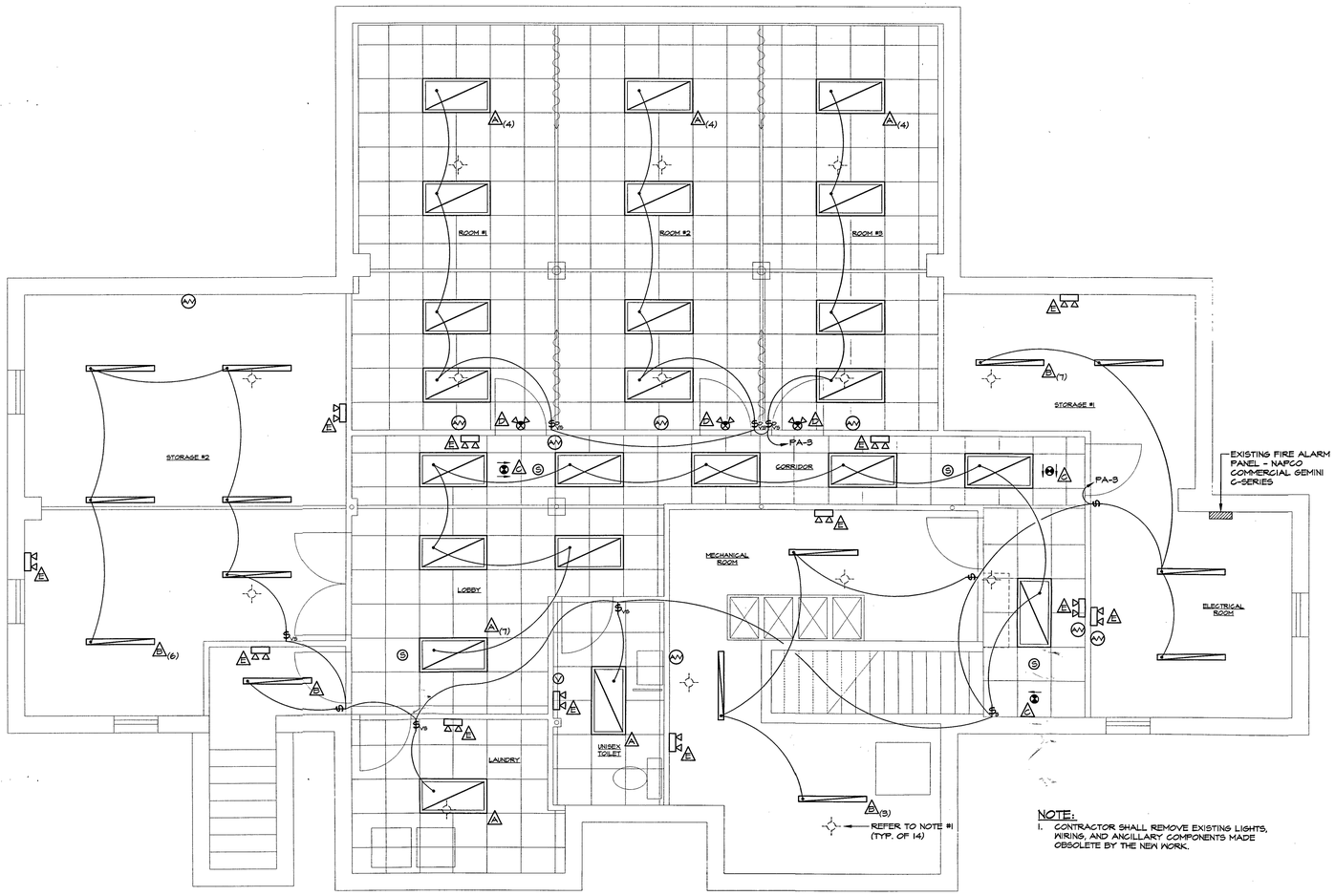

LIGHTING FLOOR PLAN
SCALE: 1/4" = 1'-0"

NOTE:
1. CONTRACTOR SHALL REMOVE EXISTING LIGHTS, WIRING, AND ANCILLARY COMPONENTS MADE OBSOLETE BY THE NEW WORK.

LEGEND

	SPECIFICATION GRADE DUPLEX RECEPTACLE
GFI	SPECIFICATION GRADE GROUND FAULT INTERRUPTER
$	SPECIFICATION GRADE SINGLE POLE SWITCH
$3	SPECIFICATION GRADE 3-WAY TOGGLE SWITCH
$VS	WALL SWITCH VACANCY SENSOR
$D VS	WALL SWITCH DIMMING VACANCY SENSOR
	LIGHTING FIXTURE (TYPE 'X' SEE SCHEDULE)
	MOTOR
	DISCONNECT SWITCH
	LIGHT FIXTURE WALL MOUNTED
	EMERGENCY FIXTURE
	EXIT SIGN
	COMBINATION EXIT/EMERGENCY FIXTURE
H	HEAT DETECTOR
S	SMOKE DETECTOR
	TELEPHONE JACK
(E)	EXISTING TO REMAIN UNLESS OTHERWISE NOTED
WP	WEATHER PROOF

FIRE ALARM EQUIPMENT SCHEDULE

SYMBOL	DESCRIPTION	REMARKS
V	VISUAL NOTIFICATION DEVICE	PROVIDE DEVICE COMPATIBLE WITH THE EXISTING FIRE ALARM SYSTEM
AV	AUDIBLE/VISUAL NOTIFICATION DEVICE	PROVIDE DEVICE COMPATIBLE WITH THE EXISTING FIRE ALARM SYSTEM
S	SMOKE DETECTOR	PROVIDE DEVICE COMPATIBLE WITH THE EXISTING FIRE ALARM SYSTEM
H	HEAT DETECTOR	PROVIDE DEVICE COMPATIBLE WITH THE EXISTING FIRE ALARM SYSTEM

NOTES:
1. ALL WORK SHALL BE INSTALLED IN STRICT COMPLIANCE WITH NFPA, STATE LAWS, LOCAL CODES AND ALL OTHER REGULATIONS GOVERNING WORK OF THIS NATURE.
2. THE CONTRACTOR IS RESPONSIBLE FOR ALL MATERIAL AND LABOR TO SATISFY A COMPLETE AND WORKING SYSTEM AS SPECIFIED AND/OR IMPLIED.
3. THE CONTRACTOR SHALL SECURE ALL PERMITS OR APPLICATIONS AND PAY ALL FEES AS REQUIRED.
4. THE CONTRACTOR SHALL MAKE ALL ELECTRICAL CONNECTIONS TO FIRE DETECTION/ SIGNALIZATION SYSTEM.
5. FIRE SAFE ALL OPENINGS IN WALLS, FLOORS AND CEILINGS RESULTING FROM THE INSTALLATION OF THE FIRE DETECTION/SIGNALIZATION SYSTEM WITH U.L. LISTED FIRE STOPPING COMPOUNDS.
6. CONTRACTOR SHALL VERIFY EXACT QUANTITIES ON THE DRAWINGS.
7. THE CONTRACTOR IS RESPONSIBLE FOR PREPARING SHOP DRAWINGS IN ACCORDANCE WITH THE 2021 NEW JERSEY EDITION OF THE INTERNATIONAL BUILDING CODE, SECTION 907.1.2 "FIRE ALARM SHOP DRAWINGS" APPROVED BY A LICENSED ENGINEER AND SUBMISSION FOR CODE REVIEW AND APPROVAL.
8. EXISTING FIRE ALARM PANEL IS A NAPCO COMMERCIAL GEMINI C-SERIES.

LIGHTING CONTROL SCHEDULE

$VS LEVITON WALL SWITCH PIR VACANCY SENSOR MODEL #ODS15-IIM. CONTRACTOR SHALL BE RESPONSIBLE FOR CONFIGURING SENSOR TO OPERATE IN VACANCY MODE

$D% LEVITON DIMMING WALL SWITCH PIR VACANCY SENSOR MODEL #ODD10-IDW

NOTES:
1. CONTRACTOR SHALL PROVIDE ALL NECESSARY RELAYS, POWER PACKS, ETC. FOR A COMPLETE AND OPERATIONAL SYSTEM.
2. INSTALLATION SHALL BE IN STRICT COMPLIANCE WITH THE MANUFACTURER'S WRITTEN INSTRUCTIONS.
3. VACANCY SENSOR CONTROL LIGHTNING SHALL BE AUTOMATICALLY SHUT OFF WITHIN 20 MINUTES OF ALL OCCUPANTS LEAVING THE SPACE.

LIGHTING FIXTURE SCHEDULE

FIXTURE	MANUFACTURER	MODEL No.	LAMPS No.	LAMPS WATTS	VOLTAGE	TYPE	MOUNTING	REMARKS
A	COLUMBIA LIGHTING	CFP22-LSCS	1	28	120	LED	RECESSED	2x2 EDGE-LIT FLAT PANEL, SWITCHABLE LUMENS/CCT, 3500K, 3603 LUMENS
B	COLUMBIA LIGHTING	LCL4-35LM-EDU	1	19	120	LED	PENDANT	4'-0" LED LENSED STRIPLIGHT, 3500K, 2576 LUMENS. REFER TO NOTE #1
C	LIGHTALARMS	GLXN500RN	1	3	120	LED	SURFACE	UNIVERSAL MOUNT, EXIT SIGN, WITH BATTERY BACKUP, RED LETTERS
D	LIGHTALARMS	LCACR2SGLEDR	2	1	120	LED	SURFACE	COMBO EXIT/EMERGENCY LTG, WITH REMOTE CAPABILITY
E	LIGHTALARMS	LCAB2SGLEDR	2	1	120	LED	SURFACE	EMERGENCY LTG

NOTE:
1. PROVIDE WITH CHAIN HANGER ASSEMBLY. CONTRACTOR SHALL BE RESPONSIBLE FOR ALL MOUNTING HARDWARE INCLUDING ALL BLOCKING AT FIXTURE MOUNTING POINTS. COORDINATE WITH GENERAL CONTRACTOR.

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SUBMISSIONS	
12/15/2023 - REVIEW/COORDINATION	
12/30/2023 - BIDDING	
1/15/2024 - PERMITS	
4/23/2024 - REDESIGN FOR REVIEW/ COORDINATION	
4/26/2024 - RE-BID	

NJ PROFESSIONAL ENGINEER No.: 24GE03585900
PA PROFESSIONAL ENGINEER No.: PE088547
DE PROFESSIONAL ENGINEER No.: 17464
MD PROFESSIONAL ENGINEER No.: 40078231
VA PROFESSIONAL ENGINEER No.: 0402057563
FL PROFESSIONAL ENGINEER No.: 71354

Daniel A. Loveland Sr., P.E.
Lead A+P

DATE: _____

MPE Consulting and Design LLC
Certificate of Authorization No: 24GA28225300
1035 N. Black Horse Pike, Suite 3
Williamstown, NJ. 08094
856-317-7500
mpedesign@mpedesign.com

LIGHTING FLOOR PLAN AND SCHEDULES

FOR

FAIRFIELD TOWNSHIP SENIOR CENTER
RENOVATIONS AND ADA IMPROVEMENTS

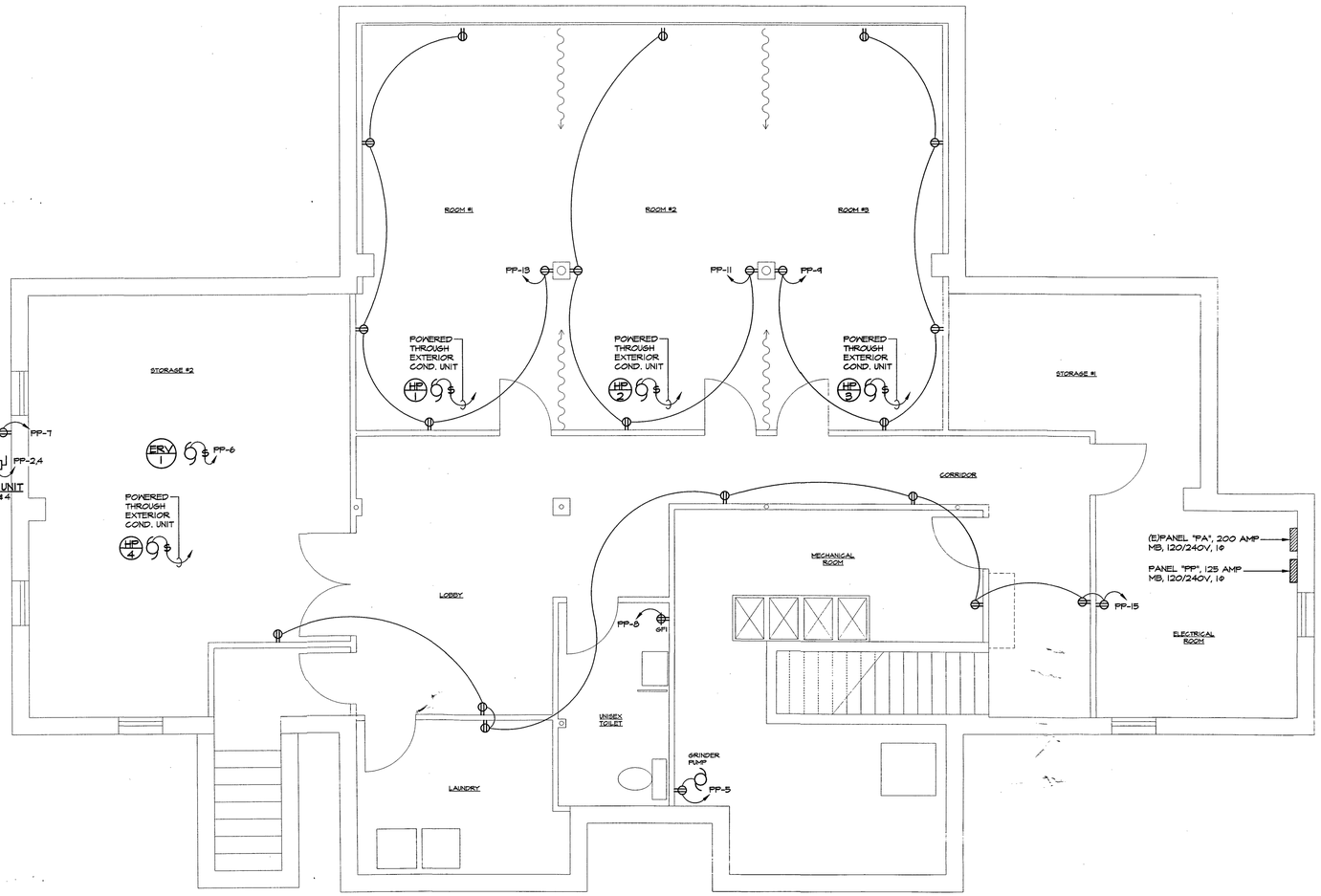
SITUATED AT

68 FAIRTON-GOULDTOWN RD.
BRIDGETON, NJ 08302

SCALE:	AS NOTED
DATE:	1/15/2024
DRAWN BY:	KJG
CHECKED BY:	DJF
APPROVED BY:	DAL SR

DWG NO.

E1



POWER FLOOR PLAN

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

NOTES:

1. ALL RECEPTACLES SHALL BE PROTECTED BY GFCI TYPE CIRCUIT BREAKERS.
2. ALL RECEPTACLES SHALL BE TAMPER RESISTANT TYPE.

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SUBMISSION:

12/13/2023 - REVIEW/COORDINATION	
12/30/2023 - BIDDING	
1/15/2024 - PERMITS	
4/23/2024 - REDESIGN FOR REVIEW/ COORDINATION	
4/26/2024 - REVISION 1 REVISED FOR RE-BID	

NJ PROFESSIONAL ENGINEER No. 24GE03895900
PA PROFESSIONAL ENGINEER No. PE075142
DE PROFESSIONAL ENGINEER No. 17464
NY PROFESSIONAL ENGINEER No. 086381
MD PROFESSIONAL ENGINEER No. 36281
CT PROFESSIONAL ENGINEER No. 0031563
FL PROFESSIONAL ENGINEER No. 71354

Daniel A. Loveland Sr., P.E.
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POWER FLOOR PLAN
FOR
FAIRFIELD TOWNSHIP SENIOR CENTER
RENOVATIONS AND ADA IMPROVEMENTS
SITUATED AT
68 FAIRTON-GOULDTOWN RD.
BRIDGETON, NJ 08302

SCALE:	AS NOTED
DATE:	1/15/2024
DRAWN BY:	KJG
CHECKED BY:	DJF
APPROVED BY:	DAL SR

DWG NO.
E2

	PANEL No. (E)PA *1				LOCATION: BASEMENT ELEC RM		VOLTAGE: 120/240			
	FRAME RATING: 200 AMP 25K				MAIN BKR. RATING: 200 AMP 25K		PHASE: 1Φ, 3W			
	DESCRIPTION: EXISTING CUTLER HAMMER - 10K AIC BRANCH CIRCUIT BREAKERS									
	SIZE B	SIZE W	CIRCUIT DESCRIPTION	LOAD	P/P	P/P	LOAD	CIRCUIT DESCRIPTION	SIZE B	SIZE W
	20	--	(E)LIGHT EM	--	1	2	--	(E)KITCHEN COUNTER	20	--
*2	20	--	(E)LIGHT BASEMENT	--	3	4	--	(E)LT -EM	20	--
	20	--	(E)OUTDOOR TLG	--	5	6	--	(E)ART RM LT - EM	20	--
	20	--	(E)KITCHEN COUNTER	--	7	8	--	(E)KITCHEN	20	--
	20	--	(E)LTG EM	--	9	10	--	(E)KITCHEN RANGE (GAS)	20	--
	20	--	(E)SUMP PUMP	--	11	12	--	(E)KITCHEN ISLAND	20	--
	20	--	(E)KITCHEN REFRIG	--	13	14	--	(E)OFFICE OUTLETS	20	--
	20	--	(E)OUTSIDE GFI	--	15	16	--	(E)POWER MAIN HALL	20	--
	20	--	(E)RECEPTION POWER	--	17	18	--	(E)POWER MAIN HALL	20	--
	20	--	(E)ARTS RM POWER	--	19	20	200	(E)OUTSIDE GFI	20	--
	20	--	(E)BOILER	--	21	22	--	(E)HTR #2	20	--
	20	--	(E)HTR #1	1500	23	24	--	(E)BASEMENT RECEPT	20	--
	20	--	(E)DISHWASHER	--	25	26	--	(E)SPARE	20	--
	20	--	(E)WELL PUMP	3840	27	28	--	(E)SPARE	20	--
	20	--	-----"-----	-----	29	30	--	(E)SPARE	20	--
	50	--	(E)AC UNIT	9360	31	32	9360	(E)AC UNIT	50	--
	50	--	-----"-----	-----	33	34	-----	-----"-----	50	--
	30	--	(E)DRYER (ELEC)	5000	35	36	--	(E)INV A SOLAR	40	--
	30	--	-----"-----	-----	37	38	-----	-----"-----	40	--
	--	--	(E)SPACE	--	39	40	--	(E)INV B SOLAR	40	--
	--	--	(E)SPACE	--	41	42	-----	-----"-----	40	--
			TOTAL CONNECTED LOAD (KW)	--	--		--	TOTAL CONNECTED LOAD (KW)		

ELECTRIC LOAD SUMMARY
EXISTING DEMAND X 125% = 16.9 KW
BASED ON UTILITY 12 MONTH
MAX. DEMAND DATA
NEW PANEL "PP" = 20.2 KW
TOTAL DEMAND = 37.1 KW

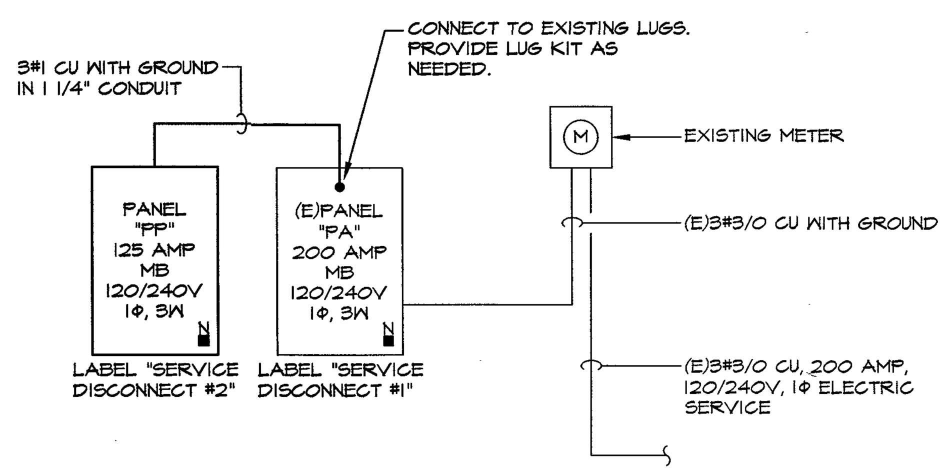
37.1 KW X 1000/240V = 154.5 AMPS X 125% = 193.2 AMPS

*NOTE:
1. LABEL PANEL "PA".
2. UTILIZE EXISTING 1 POLE, 20 AMP LIGHTING POLE POSITION TO SERVE NEW LIGHTS IN BASEMENT.

	PANEL No. PP				LOCATION: BASEMENT ELEC RM		VOLTAGE: 120/240			
	FRAME RATING: 125 AMP				MAIN BKR. RATING: 125 AMP 25K		PHASE: 1Φ, 3W			
	DESCRIPTION: SQ "D" CO., QO SERIES, W/GRD BAR KIT AND LOCKABLE COVER - 10K BRANCH CIRCUIT BREAKERS									
	SIZE B	SIZE W	CIRCUIT DESCRIPTION	LOAD	P/P	P/P	LOAD	CIRCUIT DESCRIPTION	SIZE B	SIZE W
	20	12	PANTRY FREEZER REACH-IN	240	1	2	8880	COND UNIT (HP-1,2,3&4)	40	8
	20	12	PANTRY FREEZER REACH-IN	240	3	4	-----	-----"-----	40	8
	20	12	GRINDER PUMP P-1	1920	5	6	2490	ERV-1	25	10
	20	12	EXTERIOR REC WP/GFI	200	7	8	200	TOILET ROOM REC	20	12
*1	20	12	BASEMENT RM #1 REC	1000	9	10	1600	INCLINED PLATFORM LIFT	20	12
*1	20	12	BASEMENT RM #2 REC	800	11	12	--	SPARE	20	--
*1	20	12	BASEMENT RM #3 REC	1000	13	14	--	SPARE	20	--
*1	20	12	BASEMENT CORRIDOR/GEN REC	1600	15	16	--	SPACE	--	--
	20	12	ROOM #1 - #3 LTG	720	17	18	--	SPACE	--	--
*2	20	12	MICROWAVE	1920	19	20	--	SPACE	--	--
	--	--	SPACE	--	21	22	--	SPACE	--	--
	--	--	SPACE	--	23	24	--	SPACE	--	--
					25	26				
					27	28				
					29	30				
					31	32				
					33	34				
					35	36				
					37	38				
					39	40				
					41	42				
			TOTAL CONNECTED LOAD (KW)	9.6	22.7		13.1	TOTAL CONNECTED LOAD (KW)		

ELECTRIC LOAD SUMMARY
TOTAL CONNECTED = 22.7 KW
22.7 KW X 1000/240V = 94.5 AMPS X 125% = 118.2 AMPS

*NOTE:
1. PROVIDE GFCI TYPE CIRCUIT BREAKER.
2. CONFIRM EXACT POWER REQUIREMENTS WITH FINAL EQUIPMENT SELECTION BY ARCHITECT/OWNER.



ELECTRIC SERVICE LOAD SUMMARY
EXISTING DEMAND X 125% = 16.9 KW
BASED ON UTILITY 12 MONTH
MAX. DEMAND DATA
NEW CONNECT LOAD PER DWGS = 22.7 KW
TOTAL DEMAND = 39.6 KW

39.6 KW X 1000/240V = 165.0 AMPS
EXISTING 3#3/0, 200 AMP SERVICE OK

NOTE:
1. CONTRACTOR SHALL CONFIRM ALL EXISTING CONDITIONS PRIOR TO COMMENCING WORK. IMMEDIATELY REPORT ANY DISCREPANCIES TO THE ENGINEER/ARCHITECT BEFORE PROCEEDING.

ELECTRICAL ONE LINE DIAGRAM
N.T.S.

MINIMUM SIZE EQUIPMENT GROUNDING CONDUCTORS	
MAXIMUM RATING OF OVERCURRENT DEVICES IN CIRCUIT (AMPERES)	GROUNDING CONDUCTOR SIZE (COPPER)
15	14
20	12
30	10
40	10
60	10
100	8
200	6
300	4
400	3
500	2
600	1
800	1/0

ELECTRICAL GENERAL NOTES

SCOPE
1. CONTRACTOR SHALL PROVIDE ALL POWER, LIGHTING, FIRE PROTECTION, ETC. AS INDICATED ON THESE DOCUMENTS AND AS OTHERWISE REQUIRED TO SATISFY COMPLETE AND OPERATIONAL SYSTEMS AS INTENDED.
2. CONTRACTOR SHALL COORDINATE ALL WORK WITH OTHER TRADES TO AVOID CONFLICT AND TO FACILITATE THE WORK WITHOUT CAUSING UNNECESSARY DELAYS. IMMEDIATELY REPORT ANY DISCREPANCIES, IN WRITING, TO THE ENGINEER. ALL CHANGES AND/OR ALTERATIONS REQUIRE REVIEW AND APPROVAL BY THE ENGINEER.

GENERAL
1. ALL DESIGN PROFESSIONALS, CONSULTANTS, CONTRACTORS AND SUB-CONTRACTORS PERFORMING WORK ON THIS PROJECT SHALL BE FULLY RESPONSIBLE FOR THE PROPER PERFORMANCE OF THEIR WORK, COORDINATION WITH OTHER CONSULTANTS AND TRADESPEOPLE, MEANS AND METHODS OF CONSTRUCTION, JOB SAFETY AND SECURITY. MPE CONSULTING AND DESIGN LLC INCLUDING ITS AGENTS AND EMPLOYEES ARE NOT RESPONSIBLE OR LIABLE IN ANY WAY FOR THE ABOVE AND SHALL BE HELD HARMLESS AND INDEMNIFIED BY ALL PARTIES FROM ALL CLAIMS, LOSSES, SUITS, AND LEGAL ACTION WHATSOEVER, ARISING FROM THE PERFORMANCE OF WORK ON THE PROJECT.
2. ELECTRICAL CONTRACTOR SHALL EXAMINE EXISTING ELECTRICAL EQUIPMENT, DEVICES AND WIRING TO ASSURE SAFETY AND SUITABILITY FOR CONTINUED USE. IMMEDIATELY REPORT ANY DISCREPANCIES OR DEFICIENCIES TO THE OWNER, GENERAL CONTRACTOR AND ENGINEER'S OFFICE BEFORE PROCEEDING WITH THE WORK.
3. CONTRACTOR SHALL PROVIDE FOR FIELD VERIFICATION AND COORDINATION OF ALL DIMENSIONS AND CONDITIONS PRIOR TO MATERIAL PROCUREMENT AND/OR FABRICATION. THIS CONTRACTOR SHALL BE RESPONSIBLE FOR COORDINATION WITH ALL OTHER TRADES INVOLVED. PROVIDE FOR ALL FIELD MODIFICATIONS SUCH AS OFFSETS IN CONDUIT AS NEEDED TO AVOID CONFLICT WITH ANY AND ALL OBSTRUCTIONS AND/OR INTERFERENCES THAT MAY AFFECT THE LAYOUT INDICATED ON THESE DRAWINGS. NO ADDITIONAL COST TO THE CONTRACTOR WILL BE GRANTED FOR THIS WORK.
4. THE CONTRACTOR IS RESPONSIBLE FOR ALL MATERIAL AND LABOR TO SATISFY A COMPLETE AND WORKING SYSTEM WHETHER SPECIFIED OR IMPLIED.
5. THE CONTRACTOR SHALL SECURE ALL PERMITS OR APPLICATIONS AND PAY ANY AND ALL FEES REQUIRED.
6. CONTRACTOR SHALL REVIEW AND BECOME FAMILIAR WITH ALL DRAWINGS, AND SPECIFICATIONS IN THE BID DOCUMENTS AND WORK PERFORMED BY OTHERS. FAILURE TO DO SO SHALL NOT RELIEVE THE CONTRACTOR FROM PROVIDING COMPLETE AND OPERATIONAL SYSTEMS IN ACCORDANCE WITH PERFORMANCE REQUIREMENTS.
7. CONTRACTOR TO CONFIRM EXACT LOCATION OF EXISTING AND NEW EQUIPMENT WITH OWNER'S AGENTS.
8. CONTRACTOR TO MAKE ALL ELECTRICAL CONNECTIONS TO EQUIPMENT SUPPLIED BY OTHERS.
9. DO NOT SCALE THIS DRAWING FOR EXACT DIMENSIONS. VERIFY ALL FIGURES, CONDITIONS, DIMENSIONS, ETC. AT THE JOB SITE.
10. THE BRANCH CIRCUITS FEEDING THE EMERGENCY FIXTURES SHALL ORIGINATE FROM THE SAME BRANCH CIRCUIT AS THAT SERVING THE NORMAL LIGHTING IN THE SAME AREA AND CONNECTED AHEAD OF ANY SWITCHES.
11. CONTRACTOR IS RESPONSIBLE FOR THE COMPLETE FIRE DETECTION SYSTEM.
12. CONTRACTOR TO PROVIDE AND INSTALL ALL WORKING TROUGHS, METER SOCKETS, HUBS, AND CONNECTORS IN ACCORDANCE WITH ELECTRIC UTILITY REQUIREMENTS.
13. LIGHT FIXTURES INSTALLED IN SUSPENDED CEILINGS SHALL BE INDEPENDENTLY SUPPORTED FROM BUILDING STRUCTURE.
14. LOCATIONS OF EXISTING EQUIPMENT, INCLUDING EXHAUST FANS, LIGHTING, RECEPTACLES, PANELS AND SWITCHES HAVE BEEN TAKEN FROM THE BEST AVAILABLE INFORMATION. THE DRAWINGS ARE INTENDED TO BE USED FOR INFORMATIONAL PURPOSES ONLY. THE CONTRACTOR IS NOT TO SCALE DRAWINGS OR ASSUME THAT ALL EQUIPMENT IS SHOWN. HE SHALL VISIT THE SITE TO DETERMINE THE TOTAL EXTENT OR REMOVALS AND NEW WORK AS DIAGRAMMED ON THE PLANS. EXTRA COMPENSATION FOR FAILURE TO COMPLY WITH THE ABOVE STATEMENTS WILL NOT BE CONSIDERED.
15. CONTRACTOR SHALL REFER TO ALL DRAWINGS FOR INFORMATION, SPECIFICATIONS, AND/OR INSTRUCTIONS RELATIVE TO THE PROJECT SCOPE OF WORK.
16. THIS CONTRACTOR SHALL COORDINATE ALL WORK WITH A COMPLETE SET OF M/P/E AND ARCHITECTURAL DESIGN DRAWINGS. IMMEDIATELY REPORT ANY DISCREPANCIES TO THE ENGINEERS OFFICE.
17. SERVICE EQUIPMENT SHALL BE LEGIBLY MARKED IN THE FIELD WITH MAXIMUM AVAILABLE FAULT CURRENT. FIELD MARKINGS SHALL INCLUDE THE DATE THE FAULT-CURRENT CALCULATION WAS PERFORMED.

CODES AND STANDARDS
1. ALL ELECTRICAL WORK SHALL BE PERFORMED BY A LICENSED ELECTRICIAN IN STRICT COMPLIANCE WITH THE 2020 NATIONAL ELECTRICAL CODE, 2021 NEW JERSEY EDITION OF THE INTERNATIONAL BUILDING CODE, NFPA 72, NJAC 5:23-3.16, STATE LAWS, LOCAL CODES, AND ALL OTHER REGULATIONS GOVERNING WORK OF THIS NATURE.

BRAND NAMES, STANDARDS OF QUALITY AND PERFORMANCE
1. BRAND NAMES AND/OR DESCRIPTIONS USED IN THESE DOCUMENTS ARE TO ACQUAINT THE BIDDERS WITH THE TYPES OF MATERIALS/EQUIPMENT DESIRED AND WILL BE USED AS A STANDARD BY WHICH MATERIALS/EQUIPMENT OFFERED AS EQUIVALENT WILL BE EVALUATED.
2. THE LISTED BRANDS SHALL SERVE AS A REFERENCE OR POINT OF COMPARISON FOR FUNCTION OR OPERATIONAL CHARACTERISTICS DESIRED FOR THE MATERIAL/EQUIPMENT BEING REQUESTED. WHERE BIDDER SUBMITS AN EQUIVALENT, IT SHALL BE THE RESPONSIBILITY OF THE BIDDER TO DOCUMENT THE EQUIVALENT CLAIM. FAILURE TO SUBMIT SUCH DOCUMENTATION SHALL BE GROUNDS FOR REJECTION OF THE CLAIM OF EQUIVALENT.
3. SUBSTITUTES AND "OR EQUAL" SUBMISSIONS MUST BE APPROVED IN WRITING BY ENGINEER PRIOR TO SUBMISSION OF BID.

SUBMITTALS
1. SUBMIT MANUFACTURES LITERATURE TO ENGINEERS OFFICE WHICH INDICATES THAT THE EQUIPMENT MEETS REQUIREMENTS OF THESE DRAWINGS AND SPECIFICATIONS. SUBMITTALS SHALL INCLUDE BUT NOT BE LIMITED TO;
   - LIGHTING FIXTURES
   - FIRE ALARM SYSTEM
   - PANELS
   - LIGHTING CONTROLS
   - DEVICES AND COVER PLATES

WIRING METHOD
1. WIRING METHOD SHALL BE TYPE MC UNLESS OTHERWISE NOTED.
   - OUTDOOR EXPOSED - IMC
   - OUTDOOR CONNECTION TO VIBRATING EQUIPMENT - LIQUIDTIGHT FLEXIBLE CONNECTION
   - INDOOR EXPOSED - EMT
   - INDOOR CONNECTION TO VIBRATING EQUIPMENT - FLEXIBLE METAL CONDUIT
2. UNLESS OTHERWISE NOTED NO WIRE SHALL BE SMALLER THAN #12 AWG. EXCEPT CONTROL AND SIGNAL CIRCUITS MAY BE RUN WITH #14 AWG. NO CONDUIT SHALL BE SMALLER THAN 3/4" ELECTRICAL TRADE SIZE.
3. HOME RUN CIRCUITS MORE THAN 75 FEET FROM THE PANEL BOARD SHALL BE MADE WITH #10 AWG. OR LARGER AS REQUIRED TO LIMIT VOLTAGE DROP TO 2% MAXIMUM.
4. ALL CONDUCTORS SHALL BE XHHW-2 COPPER W/90°C INSULATION OR GREATER.
5. FIRE ALARM CABLE SHALL BE FPLP - SHIELDED, PLENUM RATED, POWER-LIMITING.

DEMOLITION
1. CONTRACTOR IS RESPONSIBLE FOR SELECTIVE DEMOLITION IN ALL AREAS AS REQUIRED TO ACCOMMODATE THE PROJECT SCOPE OF WORK. ALL SYSTEMS AND ANCILLARY COMPONENTS MADE OBSOLETE SHALL BE COMPLETELY REMOVED AND DISPOSED. INSTALL BY-PASS WHERE REQUIRED TO MAINTAIN THE INTEGRITY OF OVERALL SYSTEMS REMAINING AND SERVING AREAS OUTSIDE THE SCOPE OF WORK AREA.
2. CONTRACTOR SHALL PERFORM A SITE INSPECTION TO ESTABLISH EXTENT OF DEMOLITION PRIOR TO BID.

ELECTRICAL EQUIPMENT IDENTIFICATION
1. INSTALL ENGRAVED PLASTIC LAMINATE SIGN ON EACH MAJOR ITEM OF ELECTRICAL EQUIPMENT INDICATING THE EQUIPMENT'S DESIGNATION AND AREA/SUITE SERVED.
2. ALL SWITCHBOARDS, SWITCHGEAR, PANELBOARDS, AND CABINETS SUPPLIED BY FEEDER(S) SHALL BE PERMANENTLY MARKED TO INDICATE EACH DEVICE OR EQUIPMENT WHERE THE POWER ORIGINATED. THE LABEL SHALL BE PERMANENTLY AFFIXED, OF SUFFICIENT DURABILITY TO WITHSTAND THE ENVIRONMENT INVOLVED, AND NOT HANDWRITTEN.

BOXES AND DEVICES
1. RECEPTACLE AND SWITCH PLATES SHALL BE METAL.
2. PROVIDE ACCESSIBLE SPLICE/JUNCTION BOXES AS NEEDED.
3. PROVIDE TYPED PANEL DIRECTORY TO REFLECT AS BUILT CONDITIONS.
4. EXTERIOR RECEPTACLES SHALL BE HUBBELL OR EQUAL #MM2420C NEMA 3R RATED NON-METALLIC IN-USE COVER, WITH HUBBELL GFRST20IB, 20 AMP. 120V. GFCI DEVICE.
5. ALL EQUIPMENT INSTALLED OUTDOORS SHALL BE NEMA 3R RATED.
6. MOUNTING HEIGHTS ARE AS FOLLOWS UNLESS OTHERWISE NOTED:

   LIGHT SWITCHES
   OPERABLE PARTS SHALL BE LOCATED NO HIGHER THAN 48" ABOVE FINISHED FLOOR IF THE REACH IS OVER AN OBSTRUCTION BETWEEN 20" AND 25" IN DEPTH THE MAXIMUM HEIGHT SHALL BE 44".

   WALL RECEPTACLES
   OPERABLE PARTS SHALL BE LOCATED NO LOWER THAN 15" ABOVE FINISHED FLOOR.

   EXTERIOR RECEPTACLES
   OPERABLE PARTS SHALL BE LOCATED NO LOWER THAN 15" ABOVE FINISHED GRADE.

   EMERGENCY LIGHTS
   96" ABOVE FINISHED FLOOR OR 6" BELOW FINISHED CEILING WHICHEVER IS LOWER.

   EXIT SIGNS
   96" ABOVE FINISHED FLOOR OR 6" BELOW FINISHED CEILING WHICHEVER IS LOWER.
7. CONTRACTOR SHALL PROVIDE SURFACE MOUNTED BOXES IN UNFINISHED WALL AND CEILING SPACES.
   - REFER TO ARCHITECTURAL DRAWINGS - COORDINATE WITH GENERAL CONTRACTOR.

FIRESTOP
1. PENETRATIONS FOR CABLES, CABLETRAYS, CONDUITS, PIPES, TUBES, COMBUSTION VENTS, AND EXHAUST VENTS, WIRES, AND SIMILAR ITEMS TO ACCOMMODATE ELECTRICAL, MECHANICAL, PLUMBING, AND COMMUNICATIONS SYSTEMS THAT PASS THROUGH A WALL, FLOOR, OR FLOOR/CEILING ASSEMBLY CONSTRUCTED AS A FIRE BARRIER SHALL BE PROTECTED BY A FIRESTOP SYSTEM OR DEVICE. THE FIRESTOP SYSTEM OR DEVICE SHALL BE TESTED IN ACCORDANCE WITH ASTM E 814 OR ANSI / UL 1479.

ELEVATOR MACHINE ROOM OR MACHINE SPACE
1. CONTRACTOR SHALL PROVIDED ALL ELECTRICAL REQUIREMENTS IN STRICT COMPLIANCE WITH THE ELEVATOR MANUFACTURER'S SUBMITTAL / SHOP DRAWING. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO OBTAIN AN APPROVED COPY OF THE MANUFACTURE'S DOCUMENTS AND COORDINATE ALL WORK WITH THE ELEVATOR MANUFACTURER'S CONSTRUCTION SUPERINTENDENT ASSIGNED TO THE PROJECT.
2. ALL 120V RECEPTACLE INSTALLED IN THE ELEVATOR MACHINE ROOM AND ELEVATOR PIT SHALL BE GFCI TYPE WITH THE EXCEPTION OF THE RECEPTACLE FOR THE PERMANENTLY INSTALLED SUMP PUMP PER NEC 620-85.
3. PROVIDE LIGHT AND SWITCH CONTROL 18" MAX FROM ENTRANCE OPENING TO MACHINE ROOM /SPACE.
4. PROVIDE SEPARATE 120V, 15 AMP LOCKOUT TYPE CIRCUIT BREAKERS FOR CAR LIGHTS PER NEC 620.53.
5. PROVIDE GUARD ON MACHINE ROOM OR SPACE LIGHT FIXTURE TO PREVENT CONTACT OR BREAKAGE.
6. PROVIDE ONE DEDICATED OUTSIDE TELEPHONE LINE PER CAR TO THE ELEVATOR MACHINE ROOM /SPACE AND TERMINATE AT ELEVATOR CONTROLLER.

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SUBMISSION:
12/13/2023 - REVIEW/COORDINATION
12/30/2023 - BIDDING
1/15/2024 - PERMITS
4/23/2024 - REDESIGN FOR REVIEW/ COORDINATION
4/26/2024 - REVISION 1 REVISED FOR RE-BID

NJ PROFESSIONAL ENGINEER No. 24GE03895900
PA PROFESSIONAL ENGINEER No. PE075142
DE PROFESSIONAL ENGINEER No. 17464
NY PROFESSIONAL ENGINEER No. 088381
MD PROFESSIONAL ENGINEER No. 36281
CT PROFESSIONAL ENGINEER No. 0031563
FL PROFESSIONAL ENGINEER No. 71354

Daniel A. Loveland Sr., P.E.
Leed A-P

DATE:

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Mechanical • Plumbing • Electrical • Consulting • Design MPE

ELECTRICAL NOTES, SCHEDULES AND DIAGRAMS
FOR
FAIRFIELD TOWNSHIP SENIOR CENTER RENOVATIONS AND ADA IMPROVEMENTS
SITUATED AT
68 FAIRTON-GOULDTOWN RD.
BRIDGETON, NJ 08302

SCALE: AS NOTED
DATE: 1/15/2024
DRAWN BY: KJG
CHECKED BY: DJF
APPROVED BY: DAL SR

DWG NO.
E3