

BOROUGH OF BRADLEY BEACH

MONMOUTH COUNTY, NEW JERSEY

CONSTRUCTION DOCUMENTS FOR RE-UTILIZATION OF EXISTING BUILDING

54 OCEAN AVE. BRADLEY BEACH, NJ

GENERAL CONSTRUCTION NOTES

1. The Scope of Work includes all labor, materials, equipment, scaffolding, hoisting, supervision, layout, 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/Engineer. 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 affected by the work shall be patched as required to match existing unless otherwise noted.
6. The Contractor shall maintain the existing areas free from obstructions at all times. Storage of refuse and/or building materials shall not be placed in active areas.
7. The Contractor shall not detail, order, 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 of the existing construction.
8. The Contractor shall submit shop drawing and samples for all finish materials and fabricated items. At the time of submission, the Contractor shall inform the Architect/Engineer in writing of any deviations in the shop drawings or samples from the requirement of the Contract Documents, unless the Contractor has requested of the Architect/Engineer, in writing, such deviation at the time of submission and the Architect/Engineer 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 Contractor 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 the 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 the Contractor and disposed of at the Contractor's cost. All salvageable material and/or items to be removed under the demolition portion of the work shall be returned to the Owner.
12. The Contractor shall rigidly 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/Engineer 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, if required.
17. All wood materials used shall be pressure-treated with fire retardant chemicals in accordance with New Jersey State Code and shall meet the flame spread criteria when tested in accordance with ASTM E84.
18. 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 this 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.
19. The Owner will not be responsible for loss or damage to any of the contractor's tools, equipment, or material by any cause.
20. Nothing stated in the Contract Documents is intended to conflict with any applicable standard, regulation, or code.
21. 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 shall furnish these items and shall issue appropriate copies to the Subcontractors and to other affected contractors.
22. All permits relating to the project shall be secured and paid for by the Contractor if required.
23. 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.
24. All mechanical work required for new layout shall be done in accordance with code requirements.
25. All plumbing 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.
26. 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.

OCTOBER 2025

PROJECT NUMBER : 115.BB00508.H01

ALAN N. GUBITOSI

MAYOR

BOROUGH COUNCIL:

COUNCIL PRESIDENT

JANE DENOBLE

SHANA GREENBLATT

PAUL NOWICKI

JOHN WEBER

COUNCILWOMAN

COUNCILMAN

COUNCILMAN



PROPOSED DESIGN RENDERING

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

JAM
NJ LIC NO. C-6826

LIST OF DRAWINGS

ARCHITECTURAL

- A-1 COVER SHEET
- A-2 FLOOR PLANS
- A-3 BUILDING ELEVATIONS
- A-4 BUILDING SECTIONS
- A-5 WALL SECTIONS
- A-6 SIDEWALK PLANS, SECTIONS, DETAILS
- A-7 SCHEDULES AND DETAILS
- A-8 RESTROOM ELEVATIONS AND DETAILS
- A-9 BUILDING EXTERIOR PHOTOS
- A-10 INTERIOR PHOTOS 1
- A-11 INTERIOR PHOTOS 2

SITE

- CONSTRUCTION PLAN
- GRADING PLAN
- CONSTRUCTION DETAILS

MECHANICAL PLUMBING ELECTRICAL

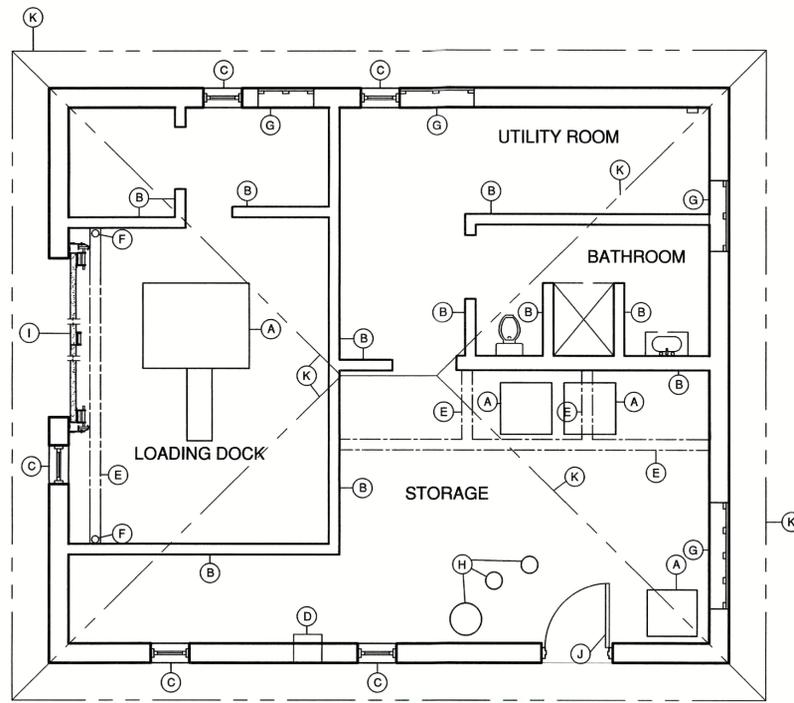
- M/E1 MECHANICAL/ELECTRICAL SPECIFICATIONS
- M/E2 MECHANICAL/ELECTRICAL SPECIFICATIONS
- M/E3 MECHANICAL/ELECTRICAL SPECIFICATIONS
- M/E4 MECHANICAL/ELECTRICAL SPECIFICATIONS
- M/E5 MECHANICAL/ELECTRICAL SPECIFICATIONS
- M1 MECHANICAL FLOOR PLAN
- P1 PLUMBING FLOOR PLAN
- P2 PLUMBING SCHEDULE AND NOTES
- E1 LIGHTING AND POWER FLOOR PLANS
- E2 LIGHTING AND POWER FLOOR PLANS



LOCATION PLAN

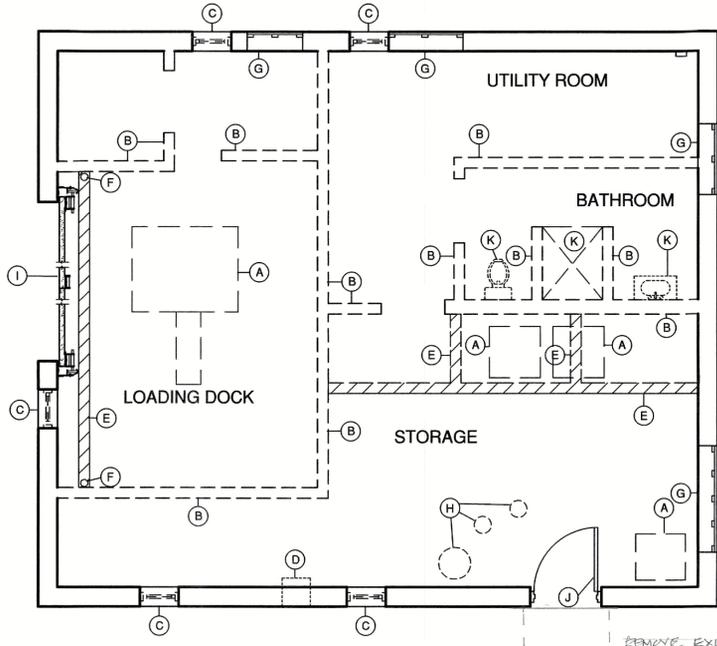
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BOROUGH OF BRADLEY BEACH 54 OCEAN AVE & PROMENADE RE-UTILIZATION OF EXISTING BUILDING COVER SHEET				
 CONSULTING AND MUNICIPAL ENGINEERS <small>ASSOCIATES</small> NJ CERTIFICATE OF AUTHORIZATION NO. 24GA28359000 <small>4041 HIGHTWAY AVENUE, PARLIN, NEW JERSEY 08859 1402 ROUTE 9 SOUTH, HOWELL, NEW JERSEY 07731-1402 649 WEST BAY AVENUE, BARNEGAT, NEW JERSEY 08005 ONE HANCOCK STREET, SUITE 40, CLACKAMAS, NEW JERSEY 08022 416 STONES HOLLOW ROAD, NEW BRUNSWICK, NEW JERSEY 08901 227 N. MAIN STREET, PLAINFIELD, NEW JERSEY 08542 203 SOUTH MAIN STREET, CAPE MAY COURT HOUSE, NEW JERSEY 08204</small>				
BENNETT A. MATLACK, P.E. <small>NEW JERSEY PROFESSIONAL ENGINEER</small>		DATE: 10/03/2025 SHEET: A-1		

FOR THE CONSTRUCT
 PROJECT: BB00508 - CONST
 FILE NO: HB00508.01



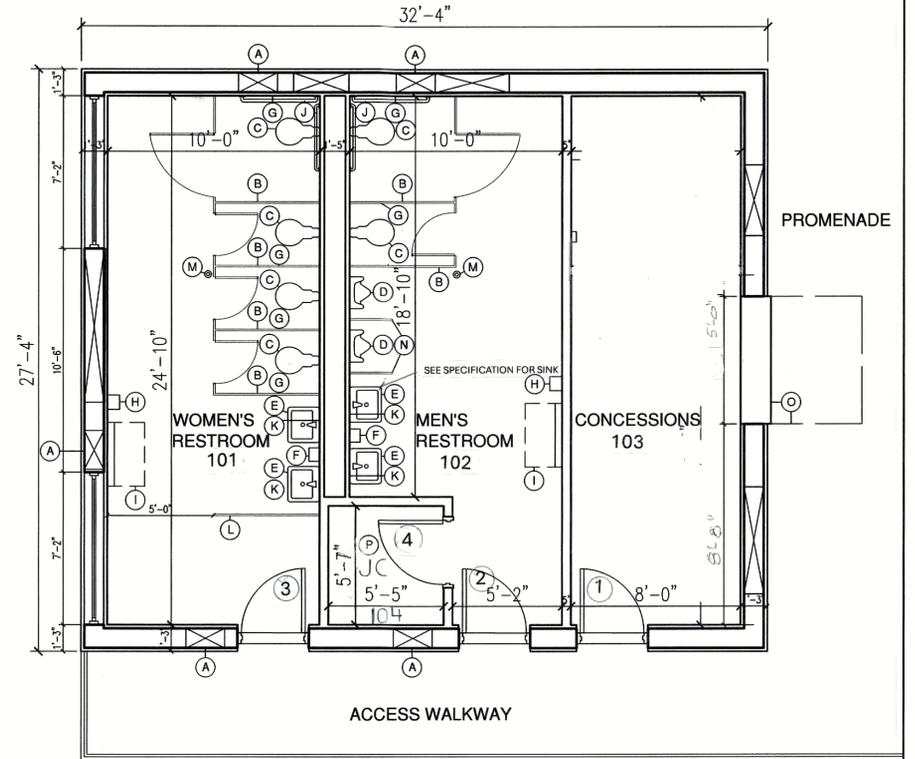
1 EXISTING PLAN
1/4" = 1' - 0"

- A PIT & PIT COVER
- B MASONRY PARTITIONS
- C DOUBLE HUNG WINDOW 22" X 36"
- D BRICK CHIMNEY
- E STEEL BEAMS ABOVE
- F STEEL COLUMN
- G WALL OPENING CLOSED
- H METAL FLOOR COVERS
- I OVERHEAD DOOR & TRACK
- J HOL. METAL DOOR & FRAME
- K ROOF LINE ABOVE



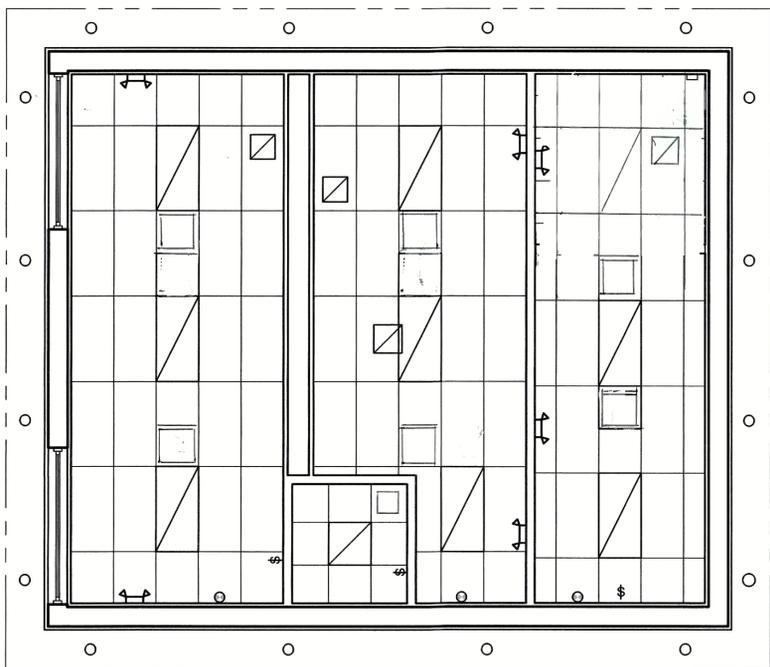
2 DEMOLITION PLAN
1/4" = 1' - 0"

- A PIT & PIT COVER TO BE REMOVED
- B MASONRY PARTITIONS TO BE REMOVED
- C DOUBLE HUNG WINDOW 22" X 36" TO BE REMOVED
- D BRICK CHIMNEY TO BE REMOVED
- E STEEL BEAMS ABOVE TO BE REMOVED
- F STEEL COLUMN TO BE REMOVED
- G WALL OPENING CLOSED TO BE FILLED IN
- H METAL FLOOR COVERS TO BE REMOVED
- I OVERHEAD DOOR & TRACK TO BE REMOVED
- J HOL. METAL DOOR & FRAME TO BE REMOVED
- K PLUMBING FIXTURES TO BE REMOVED



3 PROPOSED PLAN
1/4" = 1' - 0"

- A WINDOW TO BE FILLED IN
- B S/S TOILET PARTITION
- C TOILET W/ AUTO FLUSH
- D URINAL W/ AUTO FLUSH
- E LAV W/ AUTO FAUCET
- F AUTO SOAP DISPENSER
- G TOILET TISSUE DISPENSER
- H HAND DRYER
- I BABY CHANGING STATION
- J GRAB BARS
- K ADA MIRROR
- L S/S PARTITION
- M FLOOR DRAWN
- N S/S URINAL SCREEN
- O CONCESSION STAND WINDOW & AWNING DOOR
- P JAN. CLOSET FLOOR SINK, MOP HOOK, SHELF
- Q STOR. ROOM SHELVING

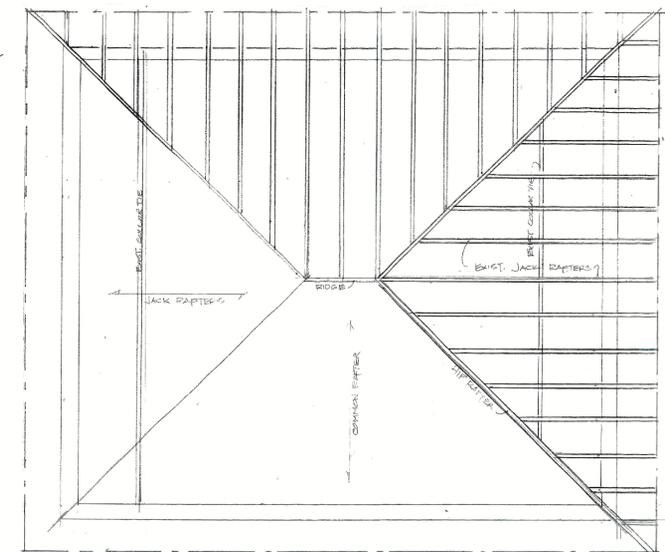


4 PROPOSED REFLECTED CEILING PLAN - SEE MEP DRAWINGS
1/4" = 1' - 0"

- 2 x 4 LED LIGHT
- EXHAUST
- ELECTRIC HEATER
- EMERGENCY LIGHT
- MOTION SENSOR
- SWITCH
- EMERGENCY EXIT SIGN

DEMOLITION NOTES

- REMOVE ALL INTERIOR PARTITIONS AS INDICATED
- REMOVE ROLL UP DOOR, TRACK ETC. FILL IN OPENING.
- REMOVE ASSOCIATES STEEL BEAM AND COLUMNS
- REMOVE ALL EXTERIOR WINDOWS
- REMOVE EXISTING CONCRETE SLAB FOR NEW WORK
- REMOVE PIT COVERS AND FILL PIT WITH CONCRETE RUBBLE, FOLLOW PROPER METHOD FOR FILLING PIT WITH CONCRETE OVER RUBBLE
- REMOVE VARIOUS CLEAN OUT COVERS
- REMOVE PLUMBING FIXTURES AND RELATED PIPE
- REMOVE STEEL BEAMS AS INDICATED
- SEE PLUMBING DRAWINGS FOR FUTURE NEW PLUMBING PIPE
- SEE SITE DRAWINGS FOR EXTERIOR MANHOLE AND OTHER COVERS FOR NEW WORK
- REMOVE EXISTING CHIMNEY FROM INSIDE AND THROUGH ROOF
- REMOVE EXISTING HOLLOW METAL DOOR AND FRAME
- REMOVE EXISTING ROOFING, SHEATHING, GUTTERS AND DOWNSPOUTS, FLASHING AT PERIMETER OF ROOF
- REMOVE EXISTING DRINKING FOUNTAIN AND STORE FOR REINSTALLATION



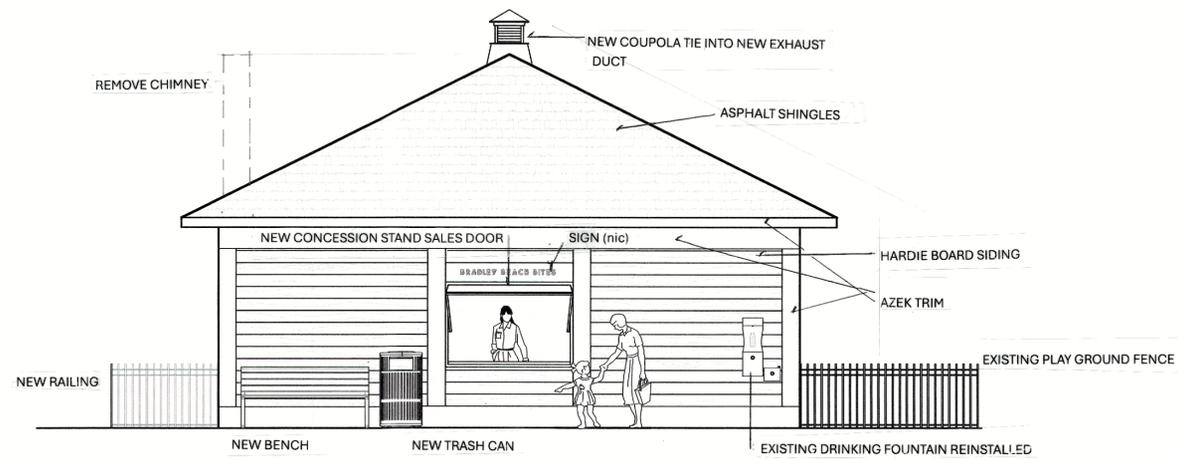
EXISTING ROOF PLAN

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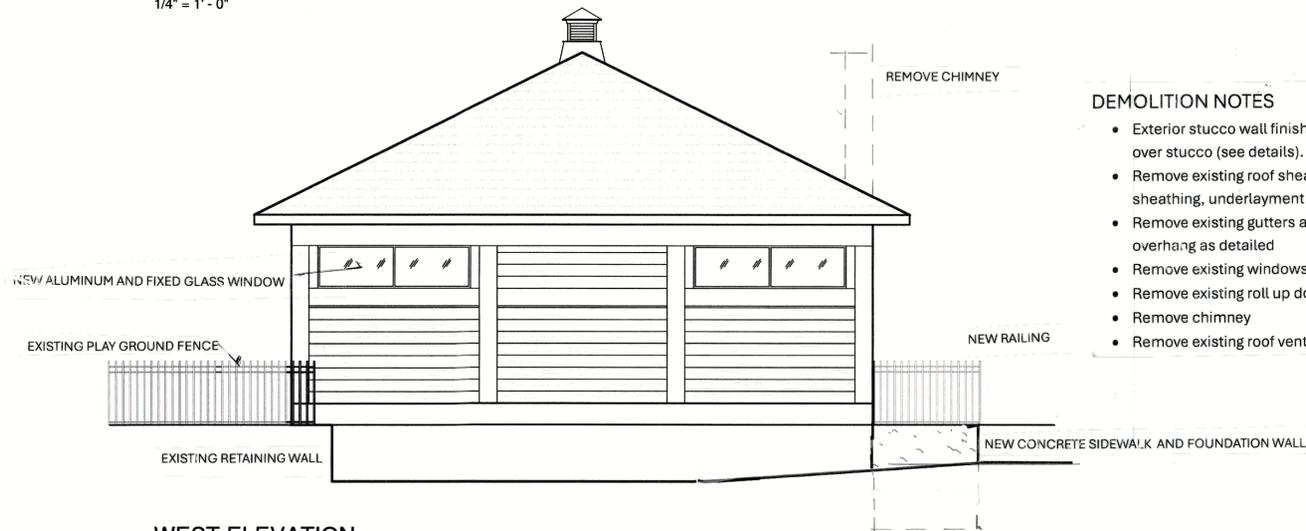
JWC
NJ LIC NO. C-6826

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BOROUGH OF BRADLEY BEACH 54 OCEAN AVE & PROMENADE RE-UTILIZATION OF EXISTING BUILDING FLOOR PLANS				
 CONSULTING AND MUNICIPAL ENGINEERS <small>N.J. CERTIFICATE OF AUTHORIZATION NO. 24CA28359000 3461 MONROETOWN AVENUE, PARLIN, NEW JERSEY 08859 — 340 ROUTE 9 SOUTH, HOWELL, NEW JERSEY 07726-0920 440 WEST BAY AVENUE, BARNEGAT, NEW JERSEY 08005-0444 — 100 MARKET STREET, SUITE 17, CAMDEN, NEW JERSEY 08102 400 STORES ROAD, MEDFORD, NEW JERSEY 08055 — 301 N. MAIN STREET, PLAINVILLE, NEW JERSEY 08859 300 SOUTH MAIN STREET, COPE HAVEN, COLORADO, NEW JERSEY 08020</small>				
BENNETT A. MATLACK, P.E. <small>DESIGNED BY: [Signature] CHECKED BY: [Signature] DATE: 10/03/2025 SHEET: A-2</small>				
<small>NEW JERSEY PROFESSIONAL ENGINEER N.J. LIC. 49346</small>				

CONSTRUCT
 BB00508 - CONST
 BB00508.01



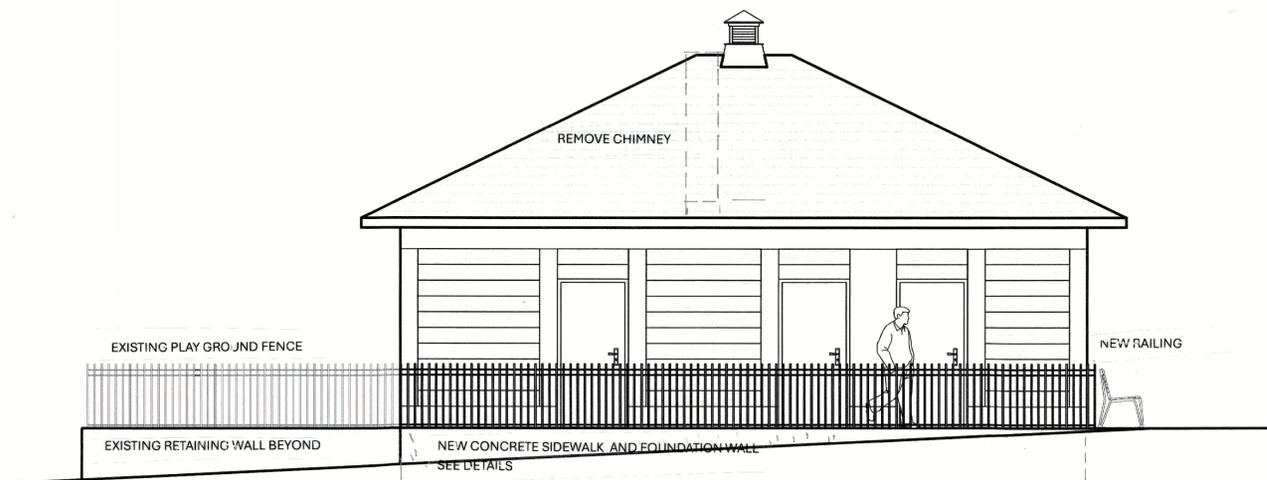
EAST ELEVATION
1/4" = 1' - 0"



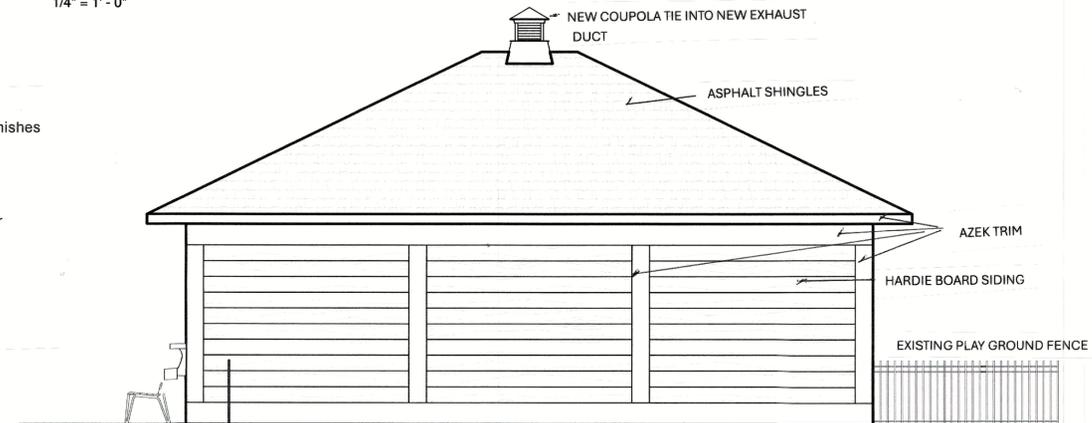
WEST ELEVATION
1/4" = 1' - 0"

DEMOLITION NOTES

- Exterior stucco wall finish to remain. New exterior wall finishes over stucco (see details).
- Remove existing roof sheathing and install new plywood sheathing, underlayment and roof shingles.
- Remove existing gutters and downspouts. Trim roof rafter overhang as detailed.
- Remove existing windows and infill.
- Remove existing roll up door and infill.
- Remove chimney
- Remove existing roof vent



SOUTH ELEVATION
1/4" = 1' - 0"



NORTH ELEVATION
1/4" = 1' - 0"



EAST ELEVATION



WEST ELEVATION



SOUTH ELEVATION



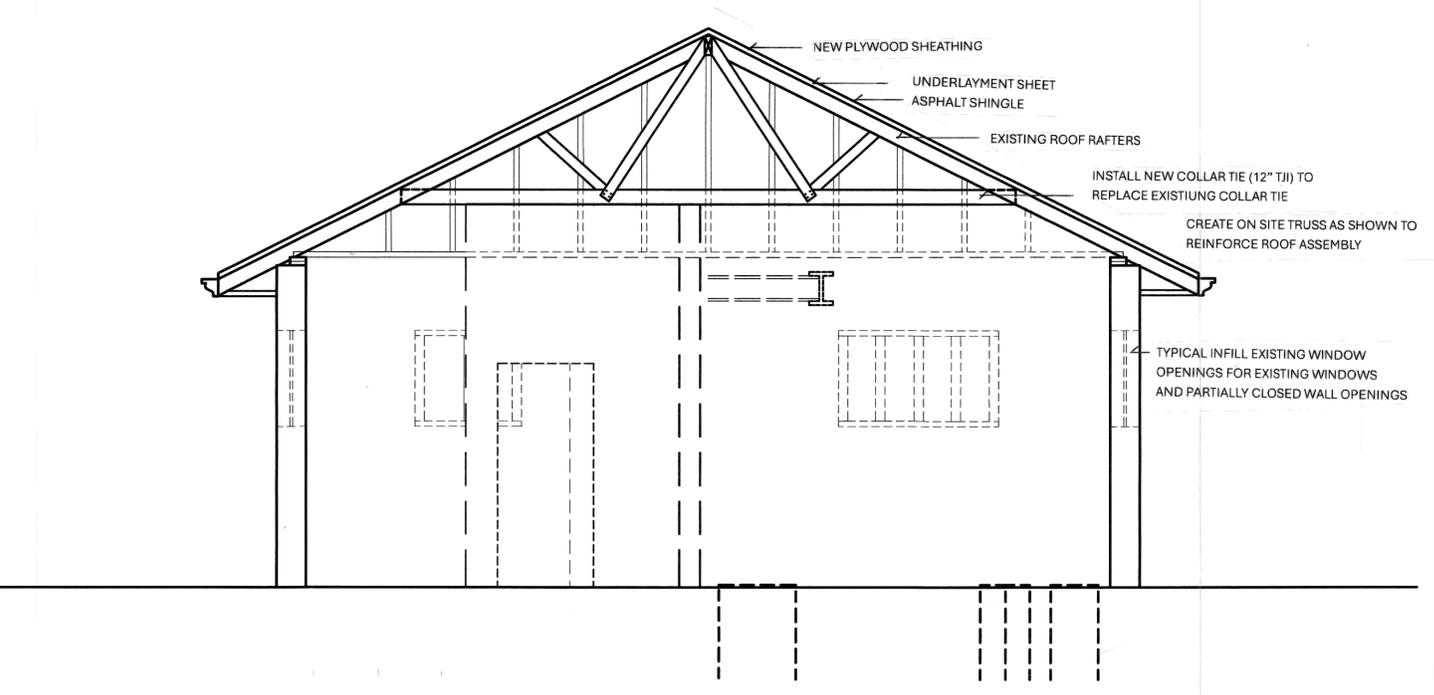
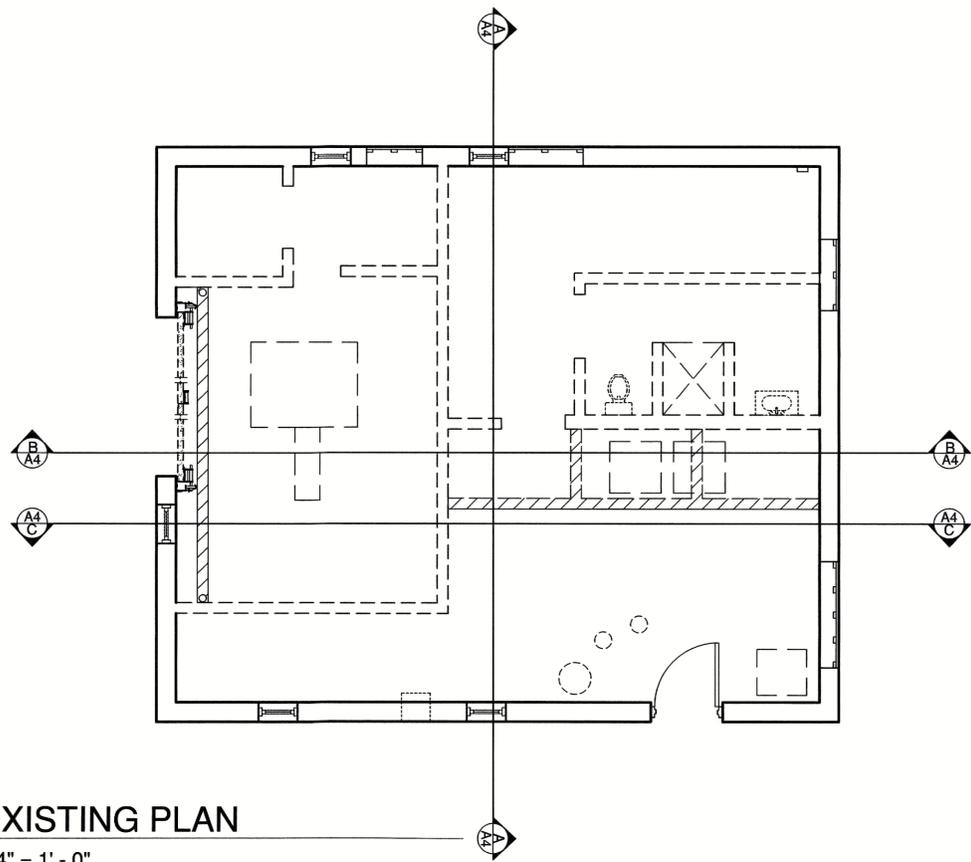
NORTH ELEVATION

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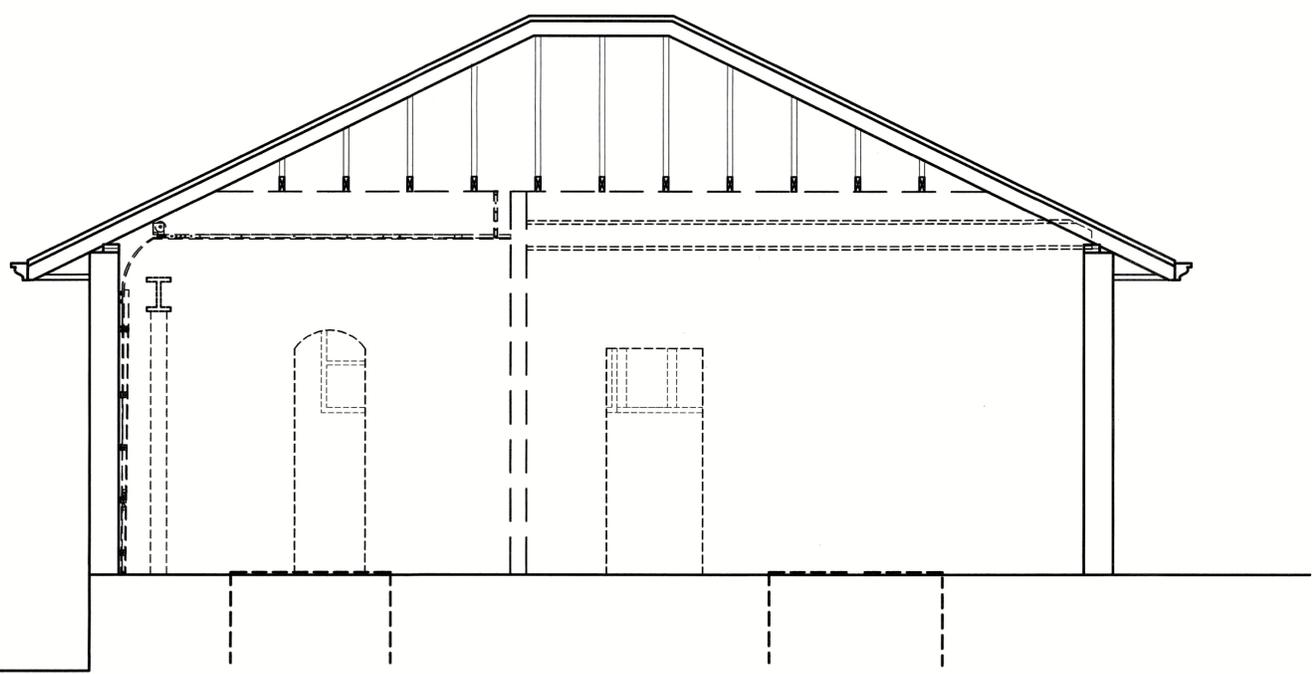
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BOROUGH OF BRADLEY BEACH 54 OCEAN AVE & PROMENADE RE-UTILIZATION OF EXISTING BUILDING BUILDING ELEVATIONS				
 CONSULTING AND MUNICIPAL ENGINEERS NJ CERTIFICATE OF AUTHORIZATION NO. 246A28359000 <small>3841 ROCKERTOWN AVENUE, PARLIN, NEW JERSEY 08859 — 1482 ROUTE 9 SOUTH, HICKNELL, NEW JERSEY 07751-0194 640 WEST BAY AVENUE, BARNEGAT, NEW JERSEY 08005-0164 — ONE MARKET STREET, SUITE 9, CANAON, NEW JERSEY 08002 408 STORES ROAD, MEDFORD, NEW JERSEY 08055 — 201 EL MAOR STREET, PLAZA MANVILLE, NEW JERSEY 08022 300 SOUTH MAIN STREET, CORE CITY COURT HOUSE, NEW JERSEY 08025</small>				
BENNETT A. MATLACK, P.E. <small>NEW JERSEY PROFESSIONAL ENGINEER</small>				
DATE: 10/03/2025 SHEET: A-3				

CONSTRUCT
PROJECT NO. BB00508 - CONST
FILE NO. HBB00508.01



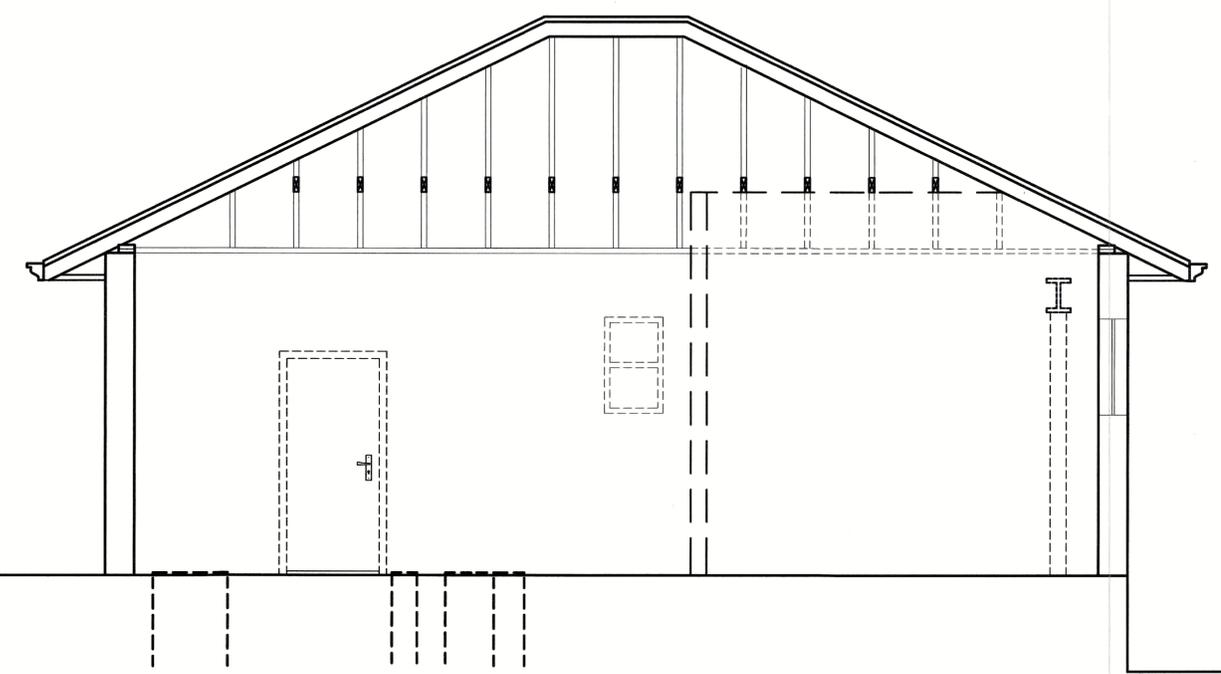
SECTION A

3/8" = 1' - 0"



SECTION B

3/8" = 1' - 0"



SECTION C

3/8" = 1' - 0"

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 ARCHITECT
 849 West Bay Ave. Suite 16
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 732 410 2650

[Signature]
 NJ LIC NO. C-6826

No.	DESCRIPTION OF REVISION	DATE	DRAWN	CHECKED
BOROUGH OF BRADLEY BEACH 54 OCEAN AVE & PROMENADE RE-UTILIZATION OF EXISTING BUILDING BUILDING SECTIONS				
BENNETT A. MATLACK, P.E. <small>NEW JERSEY PROFESSIONAL ENGINEER</small>				
<small>N.J. LIC. 49346</small>				
<small>DATE: 10/03/2025</small>				
<small>PAGE: A-4</small>				

ADA SIGN SCHEDULE		
ROOM NAME	ROOM NUMBER	REMARKS
WOMEN'S RESTROOM	101	
MEN'S RESTROOM	102	
CONCESSION	103	
IAN>< CLOSE	104	

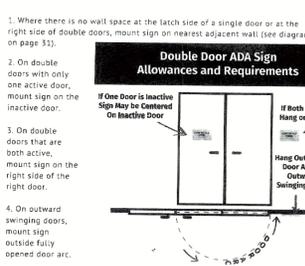
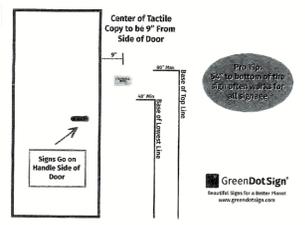
INTERIOR FINISH SCHEDULE

ROOM	FLOOR	BASE	WALL	CEILING	REMARKS
101	EPOXY	EPOXY	EPOXY	ACT	non slip
102	EPOXY	EPOXY	EPOXY	ACT	non slip
103	EPOXY	EPOXY	KTDEX	ACT	non slip vinyl clg tile
104	EPOXY	EPOXY	PT	ACT	non slip

OPENINGS		DOOR SCHEDULE				DOORS							
DOOR #	SIZE	MAT	THICKNESS	MAT	JAMB	HEAD	CONST.	GA	ELEV.	MAT	FACE	GA	remarks
	1 3-0 x 6-8	HM	1 3/4"	HMF	1	2 KD			16	3 HMD	FLUSH		18 SECURE
	2 3-0 x 6-8	HM	1 3/4"	HMF	1	2 KD			16	3 HMD	FLUSH		18 SECURE
	3 3-0 x 6-8	HM	1 3/4"	HMF	1	2 KD			16	3 HMD	FLUSH		18 SECURE
	4 3-0 x 6-8	HM	1 3/4"	HMF	1	2 KD			16	3 HMD	FLUSH		18 LOUVER
	5 5-0 x 4-0	ALUM.	1"	ALUM.									CONCESS WINDOW

ALL EXTERIOR DOORS TO RECEIVE WEATHERSTRIPPING ON # SIDES AND WEATHER PROOF SADDLE 1/2" HIGH
SEE HARDWARE SCHEDULE FOR ALL HARDWARE SPECIFICATIONS

Where to Hang an ADA Sign
Tactile Signs are Required for Every Permanent Room or Space



BUILDER SERIES SPECIFICATIONS

Sign Face: Constructed of Ultramark Acrylic which is capable of meeting all ASTM specifications for physical, optical, mechanical, thermal, electrical and flammability properties. Sign face is 1/16" (1.57) 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

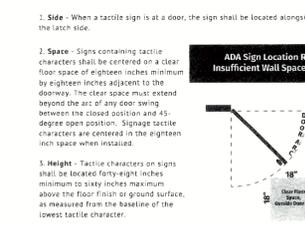
All content and style complies with ADAAG (4.30.1-7) Americans with Disabilities Act Accessibility Guidelines for Building and Facilities.

Tactile Letters and Numerals: Tactile letters and numerals 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 to be clear, with no interruption of the smooth, clean surface of the sign.

Pictograms: 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 semi-gloss 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.

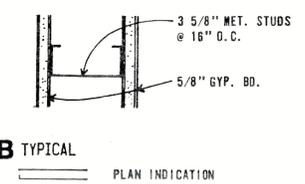
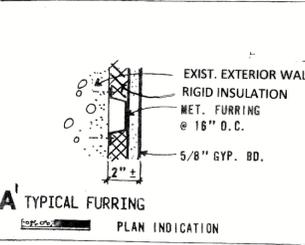
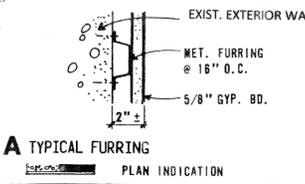
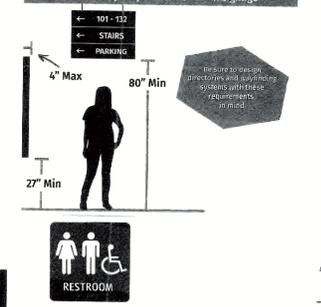


The twelve inch range of allowable hanging height, between forty-eight inches and sixty inches, accommodates signs of varied sizes to be consistently hung on the same visual line along a wall. Signs for child-oriented rooms, such as restrooms in elementary schools, are often hung at the lowest allowable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

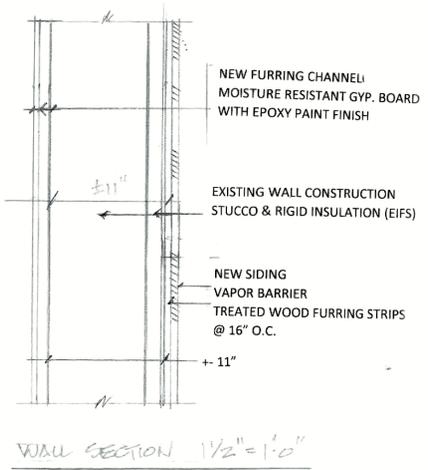
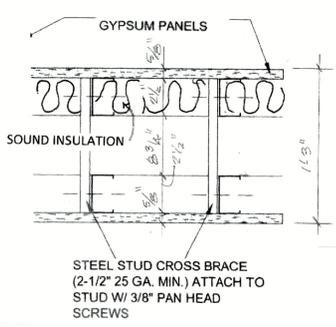
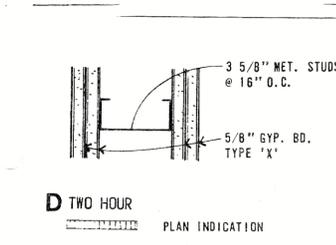
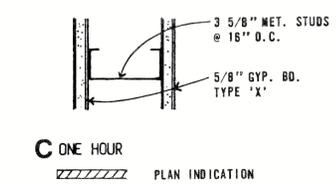
ADA SIGN INFORMATION AND DETAILS

- When hanging a sign from the ceiling, the sign bottom must be at least eighty inches above the floor.
- Signs projecting from the wall must be at least twenty-seven inches above the floor and protrude a maximum of four inches.
- Signs must not block doors or emergency equipment.

General Signage Hanging Requirements
Accessibility Requirements For All Signage

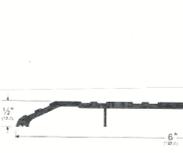
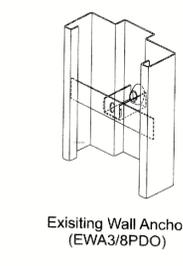


PARTITION DETAILS



BIKE RACK
Greenspace Series Recycled Plastic Bench W/ Arms (6' L)
The Greenspace Series Recycled Plastic Bench with Arms by Norwood Commercial Furniture is a durable and eco-friendly seating option that withstands weather without warping or staining. With arms on both sides for added comfort, this virtually maintenance-free bench is available in multiple colors to suit any outdoor space.

Anchor Type



Zero 475AA Perimeter Weatherstrip with Neoprene Seal and Snap Cover (Concealed Fasteners)



COUPOLA
PROVIDE FOR A 16" x 16" exhaust vent duct

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

NO.	DESCRIPTION OF REVISION	DATE	DRAWN	CHECKED
	BOROUGH OF BRADLEY BEACH 54 OCEAN AVE & PROMENADE RE-UTILIZATION OF EXISTING BUILDING SCHEDULES AND DETAILS			

BENNETT A. MATLACK, P.E.
NEW JERSEY PROFESSIONAL ENGINEER
N.J. LIC. 49346

10/03/2025

CONSTRUCT
BB00508 - CONST

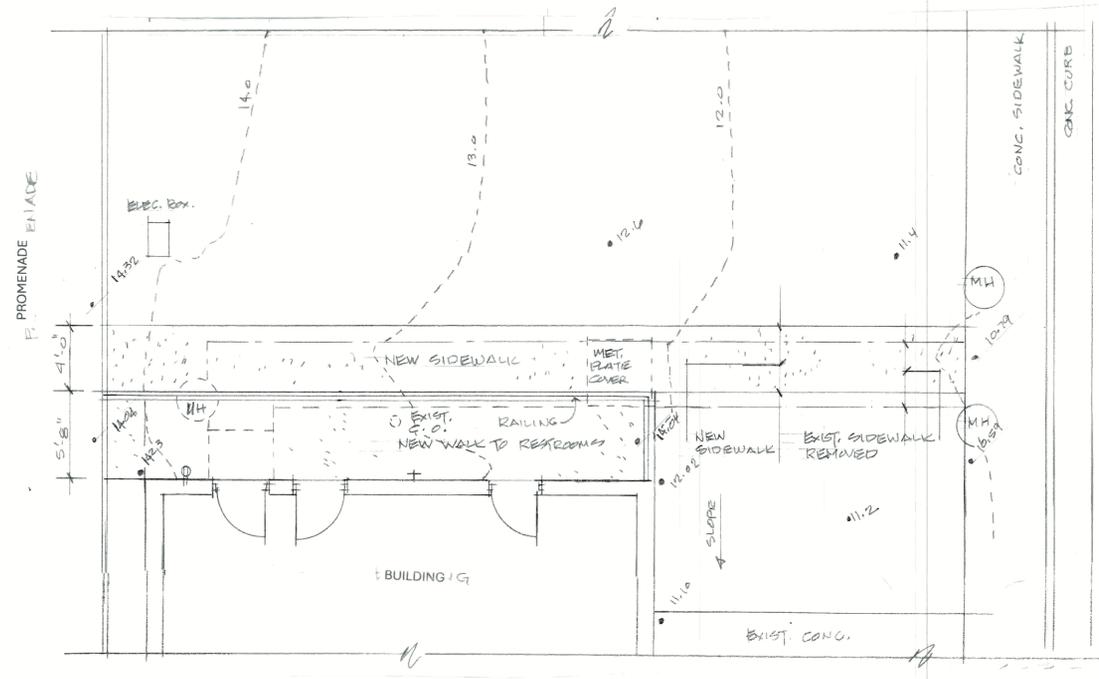
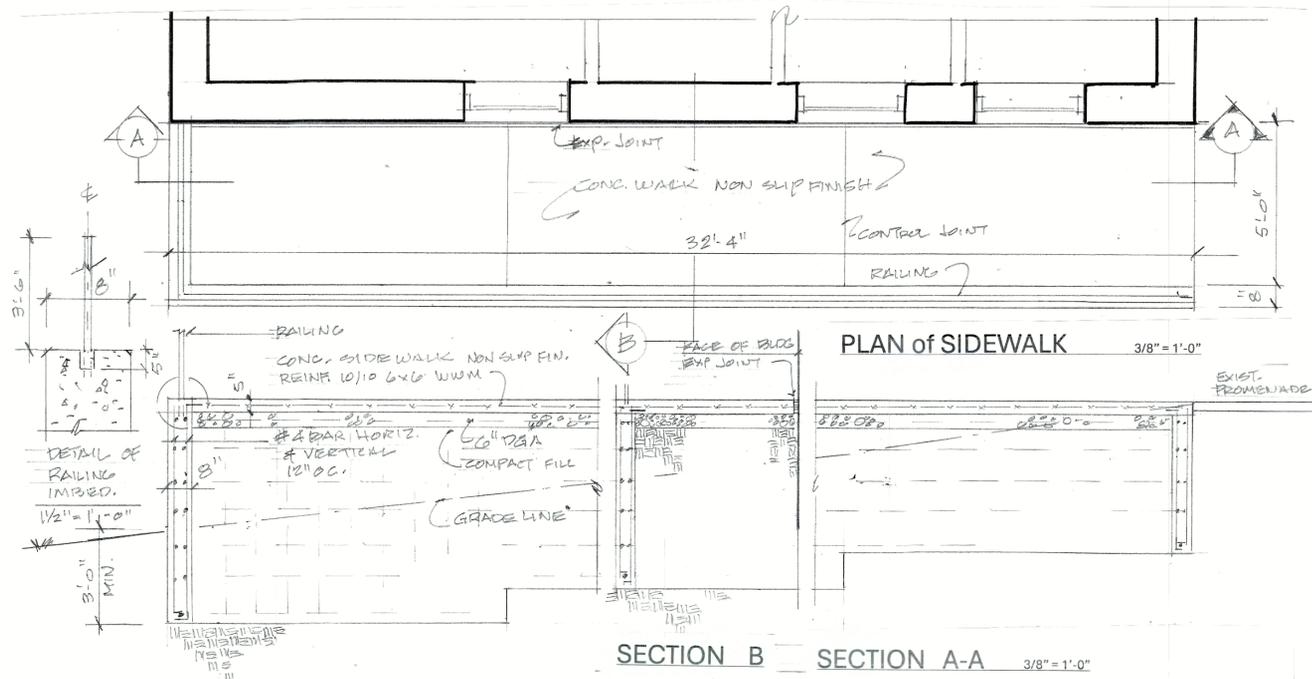
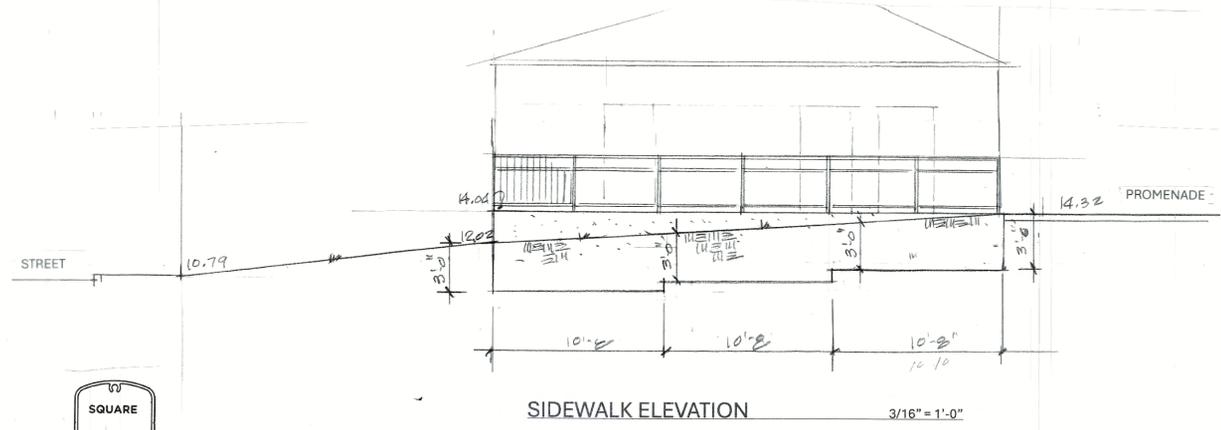


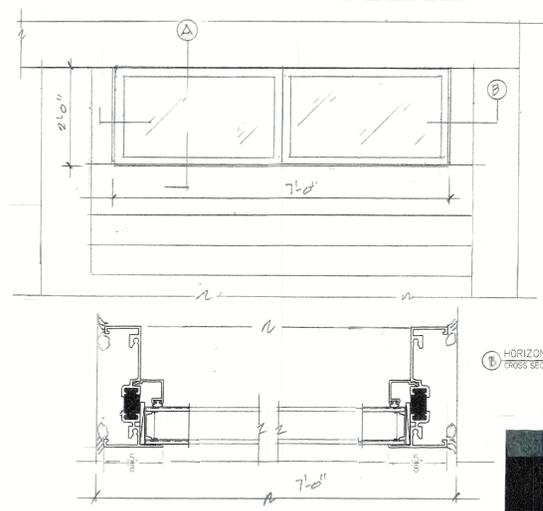
PHOTO 1

PHOTO 2

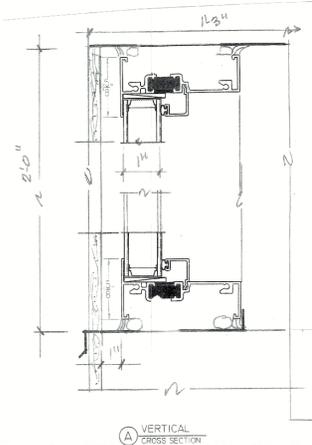


Top Rail

SIDEWALK ELEVATION 3/16" = 1'-0"



WINDOW DETAILS



VERTICAL CROSS SECTION

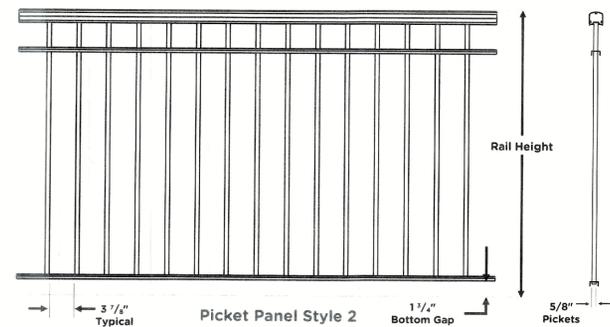
HORIZONTAL CROSS SECTION

QUAKER

E300/E350/E500 Series
3 1/4" Frame Depth
Fixed (Picture Window)

E300/E350/E500 Series Fixed (Picture Window)

Shown with Nailing Pin



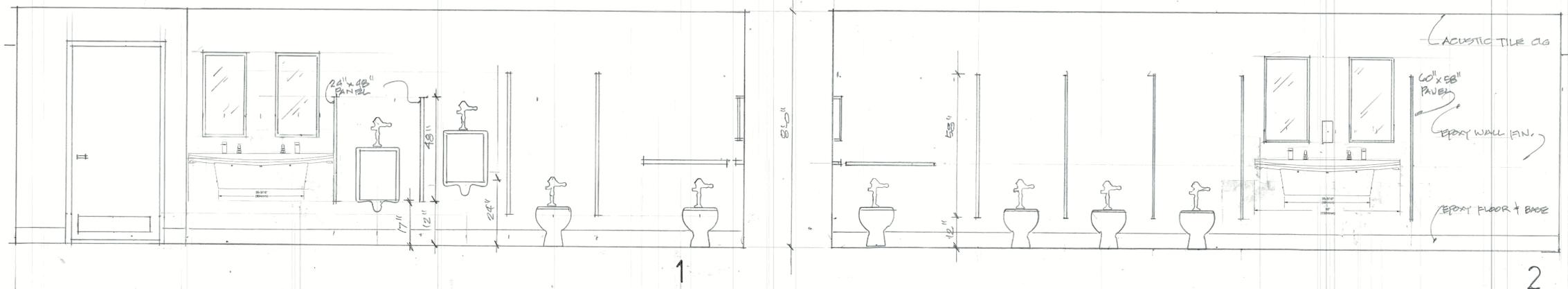
SIDEWALK RAILING

SEE SITE DETAILS FOR ADDITIONAL SIDEWALK/WALL DETAILS

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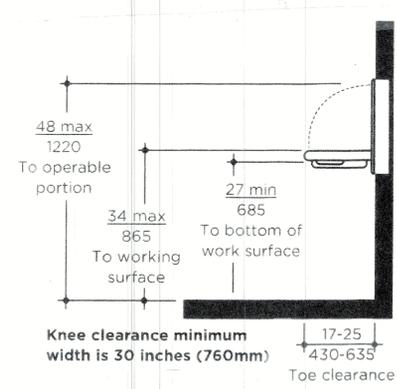
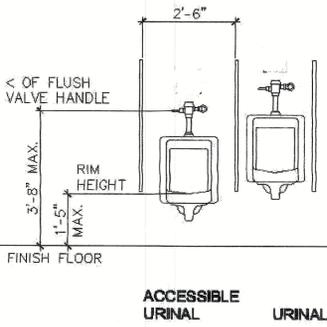
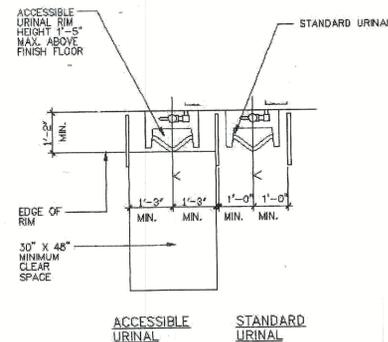
Signature
NJ LIC NO. C-6826

No.	DESCRIPTION OF REVISION	DATE	DRAWN	CHECKED
BOROUGH OF BRADLEY BEACH 54 OCEAN AVE & PROMENADE RE-UTILIZATION OF EXISTING BUILDING SIDEWALK PLANS, SECTIONS, DETAILS				
BENNETT A. MATLACK, P.E. NEW JERSEY PROFESSIONAL ENGINEER				
10/03/2025 A-6				

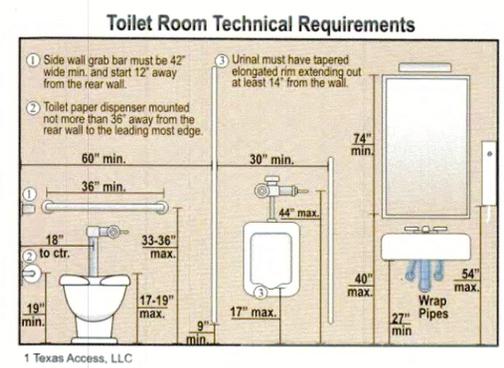
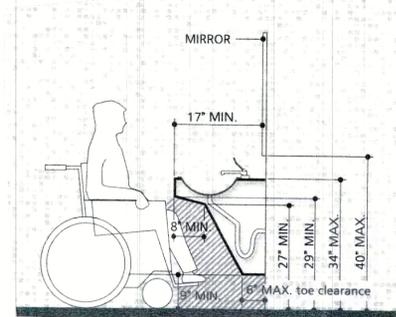
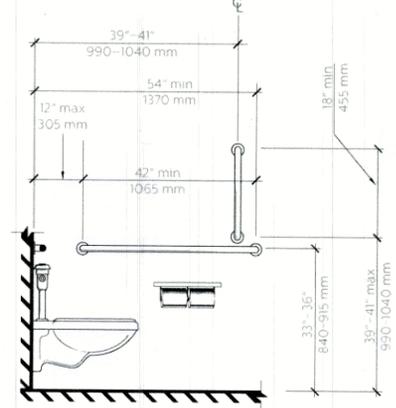
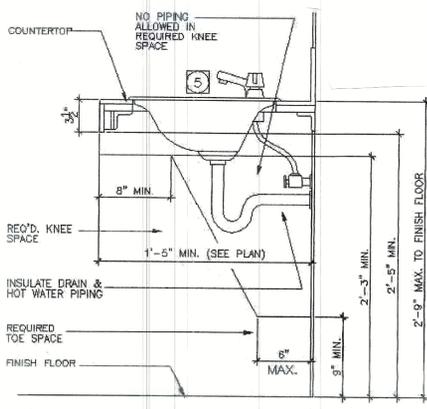


MEN'S RESTROOM ELEVATIONS

WOMEN'S RESTROOM ELEVATIONS



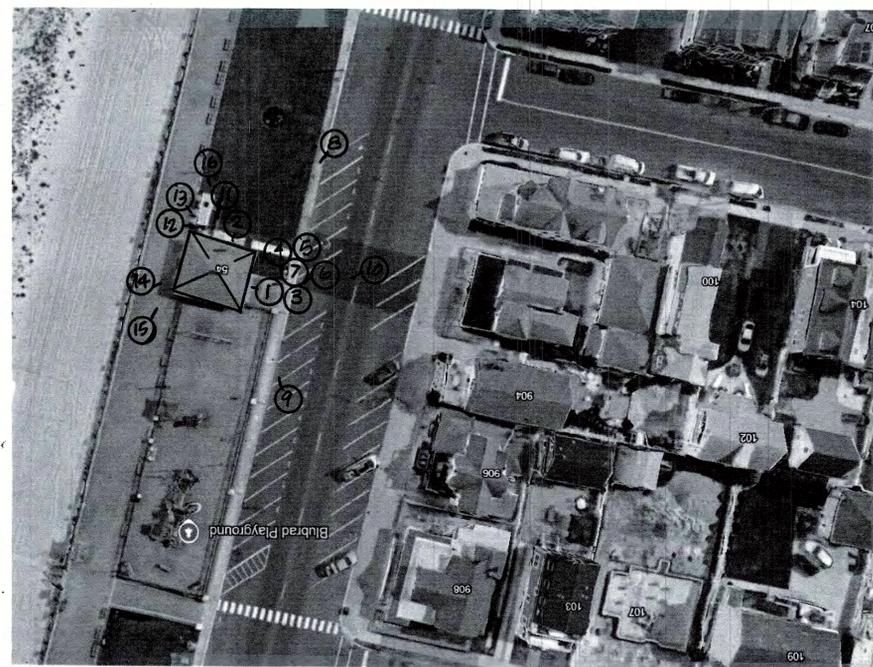
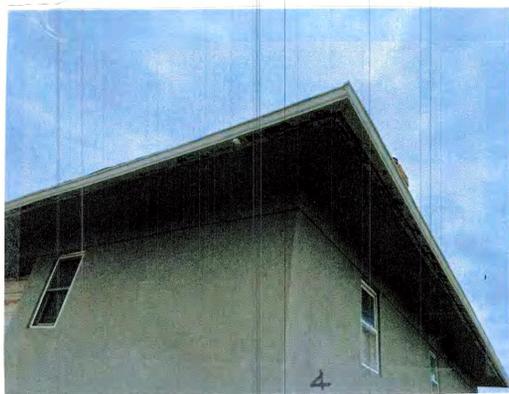
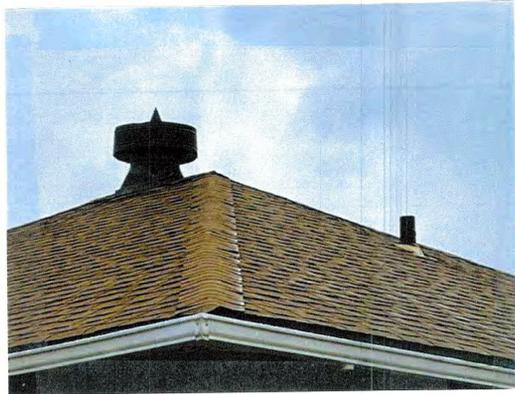
Baby Changing Station.



RESTROOM ACCESSORY SCHEDULE				
ITEM	MFG.	CAT. NUMBER	QUANTITY	REMARKS
TOILET PAPER DISP.	BOBRICK	B-2888	M 2 W 4	
GRAB BARS	BOBRICK	B-6806	3 3	one set of 3 bars each
HAND DRYER	BOBRICK	B-7128	1 1	
MIRROR	BOBRICK	B-294	2 2	18"x36", ADA Compliant
SOAP DISP.	enMotion	52060	1 1	Battery operated
BABY CHANGING	BOBRICK	KB300-SS	1 1	wall mounted
KLUTCH HOLDER	BOBRICK	B-635	2 2	WALL MOUNTED
See specifications for addition information				

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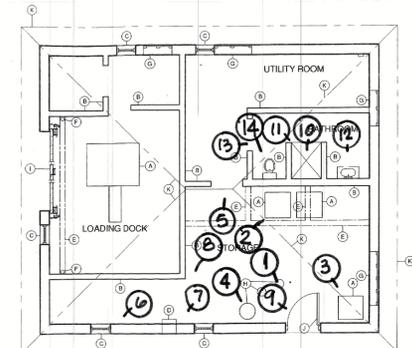
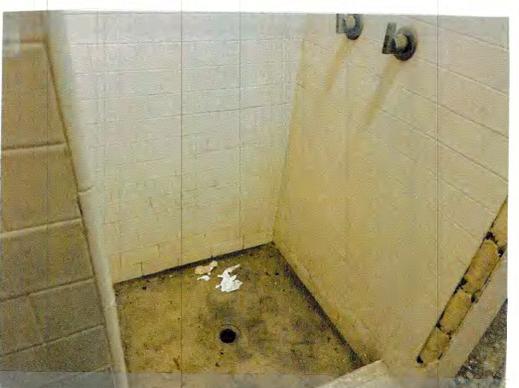
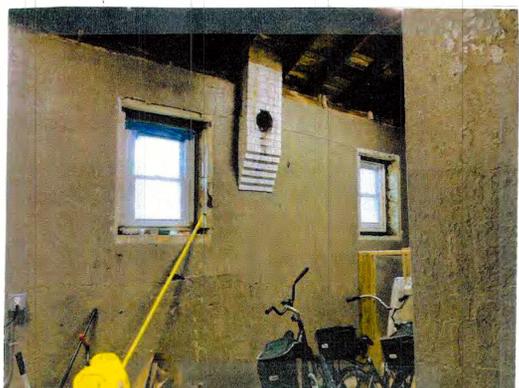
No.	DESCRIPTION OF REVISION	DATE	DRAWN	CHECKED
BOROUGH OF BRADLEY BEACH 54 OCEAN AVE & PROMENADE RE-UTILIZATION OF EXISTING BUILDING RESTROOM ELEVATIONS AND DETAILS				
 OXE ASSOCIATES CONSULTING AND MUNICIPAL ENGINEERS NJ CERTIFICATE OF AUTHORIZATION NO. 246A28359000 <small>384 ROXBOROUGH AVENUE, SPRING HOUSE, NEW JERSEY 08060-1000 — 480 SOUTH 9TH AVENUE, NEW JERSEY 07201-9941 849 WEST BAY AVENUE, SUITE 16, BARNEGAT, NEW JERSEY 08005-2944 — ONE MARKET STREET, SUITE 201, LINDEN, NEW JERSEY 07036 416 STOCK ROAD, MERVILLE, NEW JERSEY 08053 — 201 E. MAIN STREET, SUITE 201, LINDEN, NEW JERSEY 07036 283 SOUTH MAIN STREET, CAREY HAVY COURT HOUSE, NEW JERSEY 08002</small>				
BENNETT A. MATLACK P.E. <small>NEW JERSEY PROFESSIONAL ENGINEER</small>				
10/03/2025				



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Barnegat, New Jersey
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732 410 2650

JWC
NJ LIC NO. C-6826

No.	DESCRIPTION OF REVISION	DATE	DRAWN	CHECKED
	BOROUGH OF BRADLEY BEACH 54 OCEAN AVE & PROMENADE RE-UTILIZATION OF EXISTING BUILDING BUILDING EXTERIOR PHOTOS			
 CONSULTING AND MUNICIPAL ENGINEERS <small>N.J. CERTIFICATE OF AUTHORIZATION NO. 246A2305000 3461 BROADVIEW AVENUE, PARSIPpany, NEW JERSEY 07654 246 WEST OAK AVENUE, BRIDGEWATER, NEW JERSEY 08807 480 STOKES ROAD, MEDFORD, NEW JERSEY 08055 200 SOUTH MAIN STREET, PLAINVILLE, NEW JERSEY 08859 300 SOUTH MAIN STREET, CAPE MAY COURT HOUSE, NEW JERSEY 08204</small>				
BENNETT A. MATLACK, P.E. <i>Bennett A. Matlack</i> NEW JERSEY PROFESSIONAL ENGINEER N.J. LIC. 49346				
DESIGNED BY		CHECKED BY		SCALE
DATE		DATE		PROJECT
10/03/2025		A-9		FHB00508.01



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JAMES W. CASCARDI R.A.
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 732 410 2650

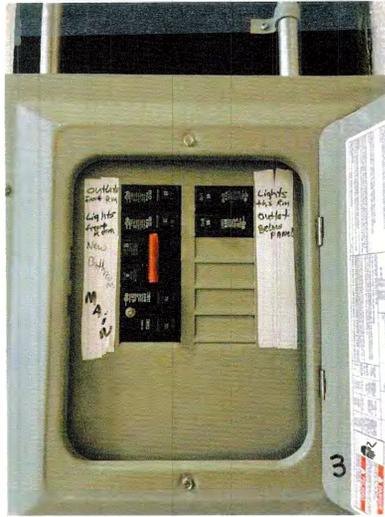
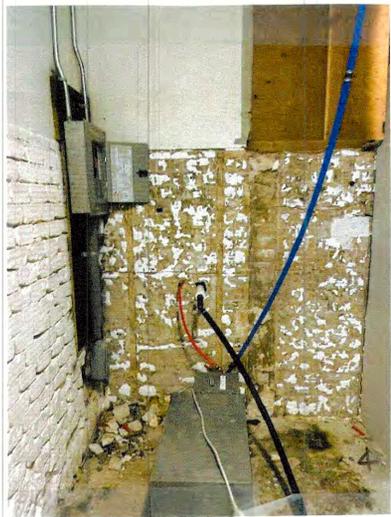
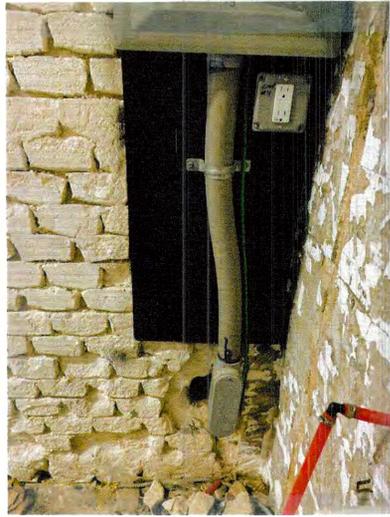
J. Matlack
 NJ LIC NO. C-6826

No.	DESCRIPTION OF REVISION	DATE	DRAWN	CHECKED
BOROUGH OF BRADLEY BEACH 54 OCEAN AVE & PROMENADE RE-UTILIZATION OF EXISTING BUILDING INTERIOR PHOTOS 1				
 CONSULTING AND MUNICIPAL ENGINEERS <small> NJ CERTIFICATE OF AUTHORIZATION NO. 246A28359000 849 WEST BAY AVENUE, SUITE 16, BARNEGAT, NEW JERSEY 08005 470 STOKES ROAD, NEW FORD, NEW JERSEY 08854 300 SOUTH MAIN STREET, CARLE PLACE, NEW JERSEY 08003 </small>				
BENNETT A. MATLACK, P.E. <small>NEW JERSEY PROFESSIONAL ENGINEER</small>		<small>DESIGNED BY</small> <small>CHECKED BY</small> <small>DATE</small> 10/03/2025 <small>SCALE</small> <small>DRAWN BY</small> <small>DATE</small> A-10		

CONSTRUCT
 BB00508 - CONIST
 Part of
 HB00508.01



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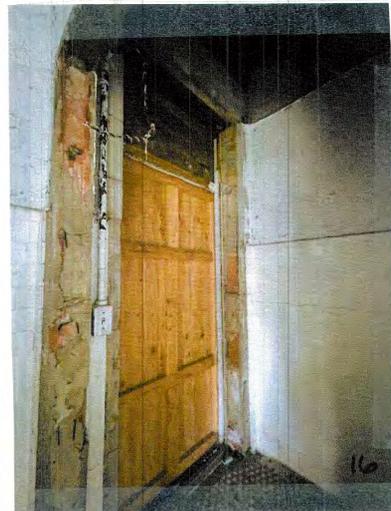
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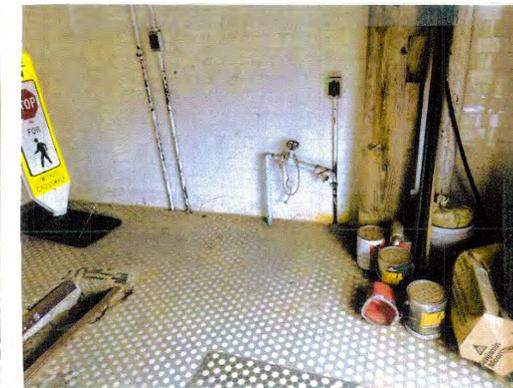
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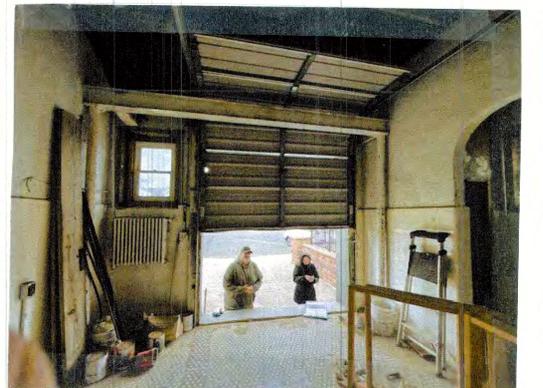
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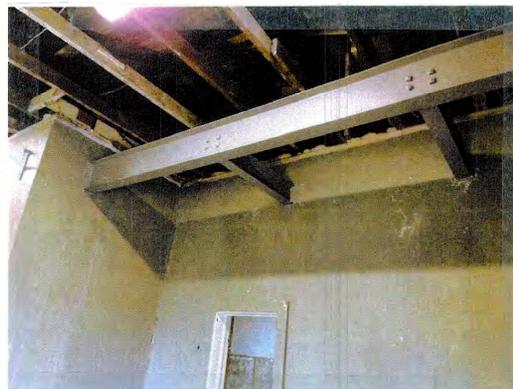
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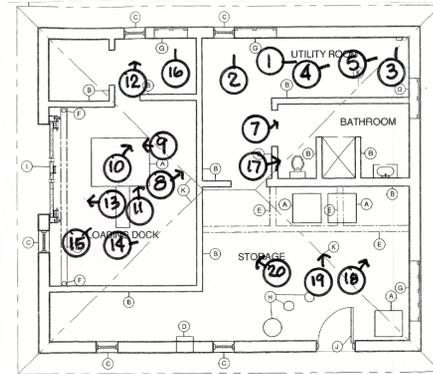
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ARCHITECT
849 West Bay Ave. Suite 16
Barnegat, New Jersey
08005
732 410 2650

JWC
NJ LIC NO. C-6826

No.	DESCRIPTION OF REVISION	DATE	DRAWN	CHECKED
	BOROUGH OF BRADLEY BEACH 54 OCEAN AVE & PROMENADE RE-UTILIZATION OF EXISTING BUILDING INTERIOR PHOTOS 2			
 CONSULTING AND MUNICIPAL ENGINEERS NJ CERTIFICATE OF AUTHORIZATION NO. 24GA28359000 <small>1945 BORDENTOWN AVENUE, PARSIPpany, NEW JERSEY 07054-1001 400 HICKORY STREET, SCOTCH PLAIN, NEW JERSEY 07228-4914 645 WEST BAY AVENUE, SUITE 16, BARNEGAT, NEW JERSEY 08005 ONE LANCASTER STREET, SUITE 101, CAHAGEN, NEW JERSEY 08002 400 STOCKER ROAD, MEDFORD, NEW JERSEY 08055 200 N. MAIN STREET, ALBANYVILLE, NEW JERSEY 08022 300 SOUTH MAIN STREET, CAPE MAY COUNTY HOUSE, NEW JERSEY 08202</small>				
BENNETT A. MATLACK, P.E.  NEW JERSEY PROFESSIONAL ENGINEER NJ LIC. 49346				
DESIGNED BY		CHECKED BY		DATE
				10/03/2025
SCALE		DRAWN BY		DATE
				A-11

FILE NO. CONSTRUCT
PROJECT NO. BB00508 - CONST
JOB NO. HB800508.01

N/F BRADLEY BEACH
RENTALS, LLC
FROM OCEAN AVENUE
BLOCK 25
LOT 10

N/F HOWLAND, THOMAS
AND SIOBAN
FROM OCEAN AVENUE
BLOCK 25
LOT 11

N/F BRADLEY BEACH
RENTALS, LLC
FROM OCEAN AVENUE
BLOCK 25
LOT 12

N/F M.A. PROPERTY
FROM OCEAN AVENUE
BLOCK 25
LOT 13

OCEAN PARK AVENUE
(75' WIDE ROW - TM)



CONSTRUCT (TYP.):
1 LS RENOVATION OF EXISTING BUILDING

CONTRACTOR SHALL PROTECT EXISTING
CONCRETE DURING CONSTRUCTION. ANY
CONCRETE THAT IS DAMAGED DURING
CONSTRUCTION SHALL BE REPLACED AT NO COST
TO THE OWNER.

CONSTRUCT (TYP.):
1 UN FURNISH AND INSTALL BIKE RACK

CONSTRUCT (TYP.):
32 LF CONCRETE RETAINING WALL

CONTRACTOR TO PROTECT THE EXISTING SEWER
LATERAL DAMAGE TO OR REMOVAL OF THE
LATERAL DURING CONSTRUCTION WILL REQUIRE THE
IN-KIND REPLACEMENT. PAYMENT WILL BE
INCLUDED IN THE LUMP SUM COST FOR BUILDING
RENOVATION

RESET CLEANOUT
WITH BRASS CAP (NO SEPARATE PAYMENT)

CONTRACTOR TO REMOVE METAL PLATE (UNDER CLEARING SITE)

CONSTRUCT (TYP.):
32 LF FURNISH AND INSTALL RAILING, 42" HIGH

CONSTRUCT (TYP.):
1 LS ABANDON EXTERIOR UNDERGROUND CHAMBER (SEE DETAIL)
1 LS ABANDON INTERIOR UNDERGROUND CHAMBER (SEE DETAIL)

RESET CLEANOUT
WITH BRASS CAP (NO SEPARATE PAYMENT)

CONTRACTOR TO RESET SPIGOT (NO SEPARATE PAYMENT)

CONTRACTOR TO REMOVE MANHOLE COVER (UNDER CLEARING SITE)

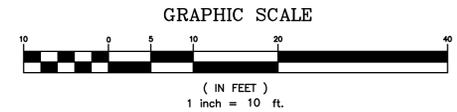
CONSTRUCT (TYP.):
47 SY CONCRETE SIDEWALK, 4" THICK

CONSTRUCT

- 1 UN FURNISH AND INSTALL BIKE RACK
- 1 LS RENOVATION OF EXISTING BUILDING
- 47 SY CONCRETE SIDEWALK, 4" THICK
- 32 LF CONCRETE RETAINING WALL
- 32 LF FURNISH AND INSTALL RAILING, 42" HIGH
- 1 LS ABANDON EXTERIOR UNDERGROUND CHAMBER (SEE DETAIL)
- 1 LS ABANDON INTERIOR UNDERGROUND CHAMBER (SEE DETAIL)

NOTES:

1. RESETTling, RESTORATION, AND PRESERVATION OF ALL EXISTING LANDSCAPING (INCLUDING MAILBOXES, TIMBER TIE CURB AND LANDSCAPE WALLS, GRANITE CURBS, LANDSCAPE AREAS, AND SIGNS) TO BE INCLUDED UNDER BID ITEM 'CLEARING SITE.'
2. CONTRACTOR TO VERIFY GRADES IN FIELD AND ENSURE GRADES CONFORM TO ADA STANDARDS.
3. CONTRACTOR TO ENSURE POSITIVE DRAINAGE THROUGHOUT ALL INTERSECTIONS. SPECIFIC ATTENTION SHALL BE GIVEN TO CURB RAMPS.
4. ALL PAVEMENT JOINTS SHALL BE SAWCUT TO MEET EXISTING. NO EXTRA PAYMENT SHALL BE MADE FOR SAWCUTTING.
5. CONTRACTOR RESPONSIBLE FOR ALL SURVEY CONTROL AND STAKEOUT.
6. CONTRACTOR RESPONSIBLE FOR RESETTling OR REPAIR OF ANY PRIVATE IRRIGATION.
7. TEST PITS SHALL BE PERFORMED IF AND WHERE ORDERED.
8. TREE REMOVAL SHALL BE REVIEWED IN THE FIELD WITH THE ENGINEER PRIOR TO CONSTRUCTION.
9. CONTRACTOR IS RESPONSIBLE TO COORDINATE WITH ALL UTILITY COMPANIES REGARDING CONFLICTS OR UTILITY PROTECTION AS NECESSARY. NO SEPARATE PAYMENT WILL BE MADE FOR RELOCATION, PROTECTION, OR DOWNTIME ASSOCIATED WITH UTILITY COORDINATION.
10. ALL PAVEMENT MARKINGS AND TRAFFIC SIGNAGE SHALL CONFORM TO THE MUTCD, 2023 EDITION.
11. CONSTRUCTION FENCE SHALL BE INSTALLED ALONG LIMIT OF DISTURBANCE WHERE REQUIRED BY ENGINEER. NO SEPARATE PAYMENT WILL BE MADE.
12. CONTRACTOR TO FILL EXISTING VAULT WITH FLOWABLE FILL.
13. CONTRACTOR TO PROTECT EXISTING SANITARY LATERAL. NO SEPARATE PAYMENT FOR REPLACEMENT OF SAME IF DAMAGED.
14. ALL MECHANICAL/ELECTRICAL WITHIN UNDERGROUND CHAMBERS TO BE REMOVED OR ABANDONED BY CONTRACTOR.



No.	DESCRIPTION OF REVISION	DATE	DRAWN	CHECKED
BOROUGH OF BRADLEY BEACH MONMOUTH COUNTY, NEW JERSEY 54 OCEAN AVE RE-UTILIZATION OF EXISTING BUILDING BLOCK 99, LOT 1 CONSTRUCTION PLAN				
 CONSULTING AND MUNICIPAL ENGINEERS NJ CERTIFICATE OF AUTHORIZATION NO. 24GA28359000 <small>3841 SCORNTOWN AVENUE, PARLIN, NEW JERSEY 08859 — 1440 ROUTE 9 SOUTH, HOWELL, NEW JERSEY 07731-9914 840 WEST BAY AVENUE, BARNEGAT, NEW JERSEY 08009-2044 — ONE MARKET STREET, SUITE 21, CANON, NEW JERSEY 08022 418 STICKS ROAD, MEDFORD, NEW JERSEY 08055 — 221 N. MAIN STREET, PLEASANTVILLE, NEW JERSEY 08052 322 SOUTH MAIN STREET, CAPE MAY COURT HOUSE, NEW JERSEY 08202</small>				
BENNETT A. MATLACK, P.E. NEW JERSEY PROFESSIONAL ENGINEER		SCALE 1"=10' DESIGNED BY BAM DATE 10/03/2025	DRAWN BY DAR CHECKED BY BAM SHEET 1 OF 3	PROJECT NO. CONSTRUCT BB00508 - CONST FILE NO. HB00508.01



N/F BRADLEY BEACH
REVITALS, LLC
#804 OCEAN AVENUE
BLOCK 25
LOT 10

N/F HOWARD THOMAS
REVITALS, LLC
#804 OCEAN AVENUE
BLOCK 25
LOT 11

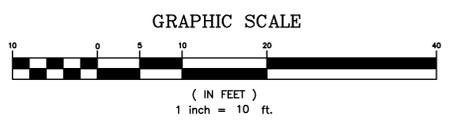
N/F BRADLEY BEACH
REVITALS, LLC
#804 OCEAN AVENUE
BLOCK 25
LOT 12

N/F NLA PROPERTY
MANAGEMENT, LLC
#804 OCEAN AVENUE
BLOCK 25
LOT 13

OCEAN PARK AVENUE
(75' WIDE ROW - TM)

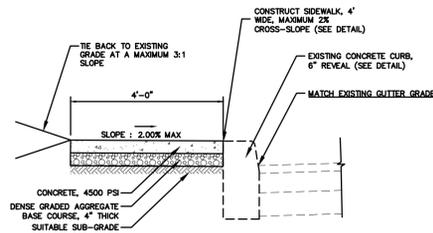
OCEAN AVENUE
(80' WIDE ROW - TM)

- NOTES:**
- CONTRACTOR'S SURVEYOR TO VERIFY EXISTING BUILDING FINISHED FLOOR ELEVATION PRIOR TO PROJECT STAKEOUT



No.	DESCRIPTION OF REVISION	DATE	DRAWN	CHECKED
BOROUGH OF BRADLEY BEACH MONMOUTH COUNTY, NEW JERSEY 54 OCEAN AVE RE-UTILIZATION OF EXISTING BUILDING BLOCK 99, LOT 1 GRADING PLANS				
<small> NJ CERTIFICATE OF AUTHORIZATION NO. 246A28359000 3441 ROBERTSON AVENUE, PARLIN, NEW JERSEY 08859 — 840 ROUTE 9 SOUTH, HOWELL, NEW JERSEY 07731-1914 849 WEST 841 AVENUE, BASKING RIDGE, NEW JERSEY 08904-0814 — ONE MARKET STREET, SUITE 100, CARLISLE, NEW JERSEY 08022 418 STOKER ROAD, MEDFORD, NEW JERSEY 08055 — 221 N. MAIN STREET, PLEASANTVILLE, NEW JERSEY 08222 208 SOUTH MAIN STREET, SCARLE HALL COURT HOUSE, NEW JERSEY 08202 </small>				
BENNETT A. MATLACK, P.E. <small>NEW JERSEY PROFESSIONAL ENGINEER</small>		SCALE 1"=10'	DRAWN BY DAR	CHECKED BY BAM
DESIGNED BY 		DATE 10/03/2025	SHEET 2 OF 3	TOTAL SHEETS 3

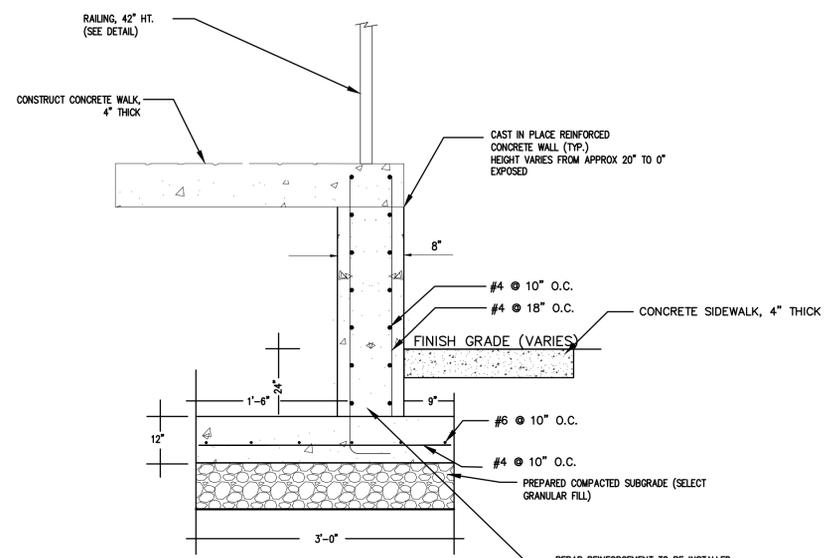
FOR NAME: CONSTRUCT
 PROJECT NUMBER: BB00508 - CONST
 SHEET NUMBER: BB00508.01



- NOTE:
- TOOLED EXPANSION JOINTS SHALL BE PROVIDED EVERY 4' AND PREMOLDED ASPHALT IMPREGNATED EXPANSION JOINTS EVERY 12'
 - GRADING INTENT WITHIN THE SPECIFIED LIMITS IS TO MATCH EXISTING GRADE AT THE EXISTING CURB GUTTER LOCATION AND PROVIDE 2% MIN. CROSS-SLOPE DRAINING TO ROADWAY
 - CONTRACTOR TO PROVIDE GRADING CUT SHEETS PRIOR TO COMMENCEMENT OF ALL WORK
 - DOWEL INTO EXISTING CURB TO CONNECT TO NEW SIDEWALK

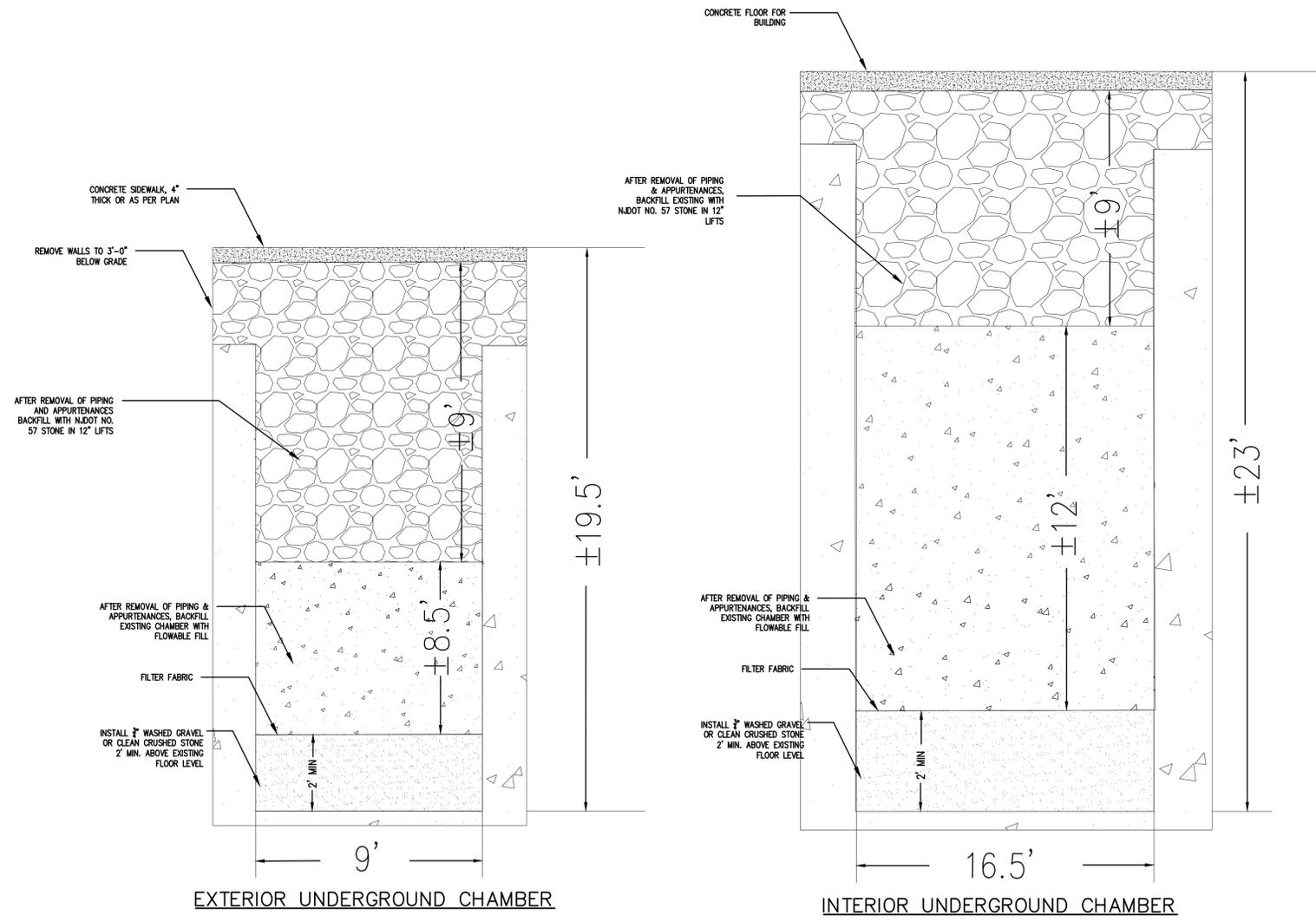
TYPICAL SIDEWALK DETAIL

N.T.S.



TYPICAL RETAINING WALL DETAIL

N.T.S.



CHAMBER ABANDONMENT DETAILS

N.T.S.

- NOTES:
- CONTRACTOR TO CONFIRM ALL DIMENSIONS AND CLEARANCES PRIOR TO PROCEEDING WITH WORK. ALL DISCREPANCIES SHALL BE BROUGHT TO THE ATTENTION OF THE ENGINEER IMMEDIATELY.
 - CONTRACTOR SHALL COORDINATE DEMOLITION AND IMPROVEMENTS WITH THE INFORMATION INCLUDED ON THE ARCHITECTURAL PLANS.
 - CONTRACTOR OPERATIONS SHALL NOT BLOCK ANY ROAD OR IMPEDE ACCESS TO ANY BUILDING OR FACILITY ON SITE.
 - CONTRACTOR MUST COMPLY WITH ALL LOCAL, STATE AND FEDERAL REGULATIONS CONCERNING CONFINED SPACE ENTRY AND MUST PROVIDE THEIR OWN SAFETY PROGRAM, EQUIPMENT AND TRAINED PERSONNEL.
 - MATERIALS AND EQUIPMENT TO BE REMOVED BY THE CONTRACTOR THAT ARE DEEMED SALVAGEABLE BY THE OWNER SHALL BE DELIVERED TO LOCATIONS DIRECTED BY THE OWNER. ALL OTHER REMOVED EQUIPMENT AND MATERIAL SHALL BE DISPOSED OF BY THE CONTRACTOR.
 - CONTRACTOR SHALL CLEAN THE EXISTING CHAMBERS OF ALL OF ITS CONTENTS PRIOR TO MODIFICATION OR REMOVAL.
 - ALL DISTURBED AREAS SHALL BE RESTORED WITH TOPSOIL AND SEED UNLESS OTHERWISE NOTED.
 - CONTRACTOR RESPONSIBLE TO DE-WATER EXISTING CHAMBERS AND OBTAIN LOCAL APPROVAL FOR SAME.

No.	DESCRIPTION OF REVISION	DATE	DRAWN	CHECKED
BOROUGH OF BRADLEY BEACH MONMOUTH COUNTY, NEW JERSEY 54 OCEAN AVE RE-UTILIZATION OF EXISTING BUILDING BLOCK 99, LOT 1 CONSTRUCTION DETAILS				
 CONSULTING AND MUNICIPAL ENGINEERS NJ CERTIFICATE OF AUTHORIZATION NO. 24GA28359000 <small>848 BORDENTOWN AVENUE, PHILADELPHIA, NEW JERSEY 08069 — 1440 ROUTE 9 SOUTH HAVEN, NEW JERSEY 07251-1114 849 WEST BAY AVENUE, BARRINGTON, NEW JERSEY 08009-2664 — ONE MARKET STREET, SUITE 11, CAMDEN, NEW JERSEY 08102 410 STOKES ROAD, MEDFORD, NEW JERSEY 08055 — 801 N. MAIN STREET, PLASANTVILLE, NEW JERSEY 08852 200 SOUTH MAIN STREET, CAPE MAY COURT HOUSE, NEW JERSEY 08202</small>				
BENNETT A. MATIACK P.E. NEW JERSEY PROFESSIONAL ENGINEER		SCALE: NTS DESIGNED BY: BAM DATE: 10/03/2025	DRAWN BY: DAR CHECKED BY: BAM SHEET: 3 OF 3	FILE NO.: HB000508.01 DRAWING NO.: CONSTRUCT CLIENT NO.: BB00508 - CONST

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, FLEUMS) 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/CEILING, 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 ORIGIN AND TERMINATION.
6. SPACED INTERMEDIATELY AT MAXIMUM SPACING OF 50' ALONG EACH PIPING RUN, EXCEPT REDUCE SPACINGS TO 25' IN CONGESTED AREAS OF PIPING AND EQUIPMENT.
7. ON PIPING ABOVE REMOVABLE ACQUSTICAL CEILING, 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 5 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 FROM 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 421, TYPE I FOR PIPING WITH TEMPERATURES BELOW AMBIENT; 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 GRAVE 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 SCRAP'S 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 PIPE 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 USE.
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 B31.4 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 504 BRONZE CASTINGS.
C. UNIONS: ASME B16.34, 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 B120.1.
D. DIELECTRIC UNIONS: THREADED, SOLDER, OR GROOVED-END CONNECTIONS AS REQUIRED TO ISOLATE APPLICATION CONSTRUCTED TO ISOLATE DISSIMILAR METALS, PREVENT GALVANIC ACTION, AND PREVENT CORROSION.
E. FLEXIBLE CONNECTORS: STAINLESS-STEEL BELLONIS WITH MOVEN, FLEXIBLE, BRONZE WIRE REINFORCED PROTECTIVE JACKET; MINIMUM 150 PSIG WORKING PRESSURE, MAXIMUM 250 DEG F OPERATING TEMPERATURE. CONNECTORS SHALL HAVE FLANSED 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 SIZES AND FRICTION LOSS, EXPANSION, RAMP SIZES, 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 CEILING, 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, CEILING, 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 REQUIRED. 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, MAKE 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 RATINGS 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.

3.2 ADJUSTS 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 ANNA C651, OR ANNA 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 SHOWS 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.

- 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 SHOWS 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.
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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 COMPLYING WITH ANSI B21, 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 CEILING, 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, CEILING, 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 APPROXIMATE 45 DEGREE WYES, HALF-WYES, OR LONG SHEEP 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 GREATER 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 PIPING 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 SPECIALITIES:

- 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-INSPECTION BY THE PLUMBING OFFICIAL.
4. REPORTS: PREPARE INSPECTION REPORTS, SIGNED BY THE PLUMBING OFFICIAL.

MECHANICAL/ELECTRICAL SPECIFICATIONS FOR RE-UTILIZATION OF EXISTING BUILDING. Includes project information, drawing details, and company contact information for MPB Consulting and Design LLC.

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:

- 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.
- 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.
- 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, THROUGH COMPLETION OF THE INSPECTION. INSPECT ALL JOINTS FOR LEAKS.
- 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 1/2" 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.
- REPAIR ALL LEAKS AND DEFECTS USING NEW MATERIALS RETEST SYSTEM OR PORTION THEREOF UNTIL SATISFACTORY RESULTS ARE OBTAINED.
- PREPARE REPORTS FOR ALL TESTS AND REQUIRED CORRECTIVE ACTION.

3.7 ADJUSTING AND CLEANING:

- CLEAN INTERIOR OF PIPING SYSTEM. REMOVE DIRT AND DEBRIS AS WORK PROGRESSES.
- CLEAN DRAIN STRAINERS, DOMES, AND TRAPS. REMOVE DIRT AND DEBRIS.

3.5 VALVE INSTALLATION

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

- ON EXISTING CONCRETE CONSTRUCTION, HOLES FOR NEW PIPING SHALL BE MADE WITH POWER-DRIVEN CIRCULAR CUTTERS. NO PIPE SLEEVES ARE REQUIRED.
- 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.
- ON PIPE PENETRATIONS BELOW GRADE, CAULK SPACE BETWEEN PIPES AND PIPE SLEEVES WITH OAKUM AND MASTIC, AND MAKE WATERTIGHT.
- 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 KNOWN OUT OF POSITION DURING POURING OF CONCRETE. CAULK SPACE AROUND PIPE WITH MASTIC AND OAKUM.

3.7 SEISMIC RESTRAINTS

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

SECTION 15991 METAL DUCTWORK

PART 1 - GENERAL

1.1 DEFINITIONS:

- SEALING REQUIREMENTS DEFINITIONS: FOR THE PURPOSES OF DUCT SYSTEMS SEALING REQUIREMENTS SPECIFIED IN THIS SECTION, THE FOLLOWING DEFINITIONS APPLY:
 - 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.
 - JOINTS: JOINTS INCLUDE GIRTH JOINTS, BRANCH AND SUB-BRANCH INTERSECTIONS, SO CALLED DUCT COLLAR TAPINGS, FITTING SUBSECTIONS, LOUVER AND AIR TERMINAL CONNECTIONS TO DUCTS, ACCESS DOOR AND ACCESS PANEL FRAMES AND JAMBS, DUCT, FLENUM, AND CASING ABUTMENTS TO BUILDING STRUCTURES.

1.2 SYSTEM PERFORMANCE REQUIREMENTS:

- 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:

- NFPA COMPLIANCE: COMPLY WITH THE FOLLOWING NFPA STANDARDS:
 - NFPA 90A, "STANDARD FOR THE INSTALLATION OF AIR CONDITIONING AND VENTILATING SYSTEMS," EXCEPT AS INDICATED OTHERWISE.

PART 2 - PRODUCTS

2.1 SHEET METAL MATERIALS:

- SHEET METAL, GENERAL: PROVIDE SHEET METAL IN THICKNESSES INDICATED, PACKAGED AND MARKED AS SPECIFIED IN ASTM A 100.
- 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.
- 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:

- SHEET METAL, GENERAL: PROVIDE SHEET METAL IN THICKNESSES INDICATED, PACKAGED AND MARKED AS SPECIFIED IN ASTM A 100.
- 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.
- 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:

- BUILDING ATTACHMENTS: CONCRETE INSERTS, POWDER ACTUATED FASTENERS, OR STRUCTURAL STEEL FASTENERS APPROPRIATE FOR BUILDING MATERIALS.
- HANGERS: GALVANIZED SHEET STEEL, OR ROUND, UNCOATED STEEL, THREADED ROD.
 - HANGERS INSTALLED IN CORROSIVE ATMOSPHERES, ELECTRO-GALVANIZED, ALL-THREAD ROD OR HOT-DIPPED-GALVANIZED RODS WITH THREADS PAINTED AFTER INSTALLATION.
 - 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.
 - DUCT ATTACHMENTS: SHEET METAL SCREWS, BLIND RIVETS, OR SELF-TAPPING METAL SCREWS; COMPATIBLE WITH DUCT MATERIALS.
 - TRAPEZOID AND RISER SUPPORTS: STEEL SHAPES CONFORMING TO ASTM A 36.

2.4 RECTANGULAR DUCT FABRICATION:

- GENERAL: EXCEPT AS OTHERWISE INDICATED, FABRICATE RECTANGULAR DUCTS WITH GALVANIZED SHEET STEEL, IN ACCORDANCE WITH SMACNA HVAC DUCT CONSTRUCTION STANDARDS; TABLES 1-3 THROUGH 1-14, 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.
 - FABRICATE RECTANGULAR DUCTS IN LENGTHS APPROPRIATE TO REINFORCEMENT AND RIGIDITY CLASS REQUIRED FOR PRESSURE CLASSIFICATION.
 - PROVIDE MATERIALS THAT ARE FREE FROM VISUAL IMPERFECTIONS SUCH AS FITTING, SEAM MARKS, ROLLER MARKS, STAINS, AND DISCOLORATIONS.
- STATIC PRESSURE CLASSIFICATIONS: EXCEPT WHERE OTHERWISE INDICATED, CONSTRUCT DUCT SYSTEMS TO THE FOLLOWING PRESSURE CLASSIFICATIONS:
 - SUPPLY DUCTS: 3 INCHES WATER GAGE.
 - RETURN DUCTS: 2 INCHES WATER GAGE, NEGATIVE PRESSURE.
 - EXHAUST DUCTS: 2 INCHES WATER GAGE, NEGATIVE PRESSURE.
- CROSSBREAKING OR CROSS BEADING: CROSSBREAK OR BEAD DUCT SIDES THAT ARE 18 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:

- 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:

- DUCT SYSTEM PRESSURE CLASS, CONSTRUCT AND INSTALL EACH DUCT SYSTEM FOR THE SPECIFIC DUCT PRESSURE CLASSIFICATION INDICATED.
- INSTALL DUCTS WITH THE FEWEST POSSIBLE JOINTS.
- USE FABRICATED FITTINGS FOR ALL CHANGES IN DIRECTIONS, CHANGES IN SIZE AND SHAPE, AND CONNECTIONS.
- INSTALL COUPLINGS TIGHT TO DUCT WALL SURFACE WITH PROJECTIONS INTO DUCT AT CONNECTIONS KEPT TO A MINIMUM.
- 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.
- INSTALL DUCTS CLOSE TO WALLS, OVERHEAD CONSTRUCTION COLUMNS, AND OTHER STRUCTURAL AND PERMANENT ENCLOSURE ELEMENTS OF BUILDING.
- INSTALL INSULATED DUCTS WITH 1-INCH CLEARANCE OUTSIDE OF INSULATION.
- CONCEAL DUCTS FROM VIEW IN FINISHED AND OCCUPIED SPACES BY LOCATING IN MECHANICAL SHAFTS, HOLLOW WALL CONSTRUCTION, OR ABOVE SUSPENDED CEILINGS. DO NOT INCREASE HORIZONTAL RUNS IN SOLID PARTITIONS, EXCEPT AS SPECIALLY SHOWN.
- COORDINATE LAYOUT WITH SUSPENDED CEILING AND LIGHTING LAYOUTS AND SIMILAR FINISHED WORK.

3.2 SEAM AND JOINT SEALING:

- GENERAL: SEAL DUCT SEAMS AND JOINTS AS FOLLOWS:
 - PRESSURE CLASSIFICATION LESS THAN 2 INCHES WATER GAGE: TRANSVERSE JOINTS ONLY. SEAL EXTERNALLY INSULATED DUCTS PRIOR TO INSULATION INSTALLATION.

3.3 HANGING AND SUPPORTING:

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

- BRANCH CONNECTIONS: COMPLY WITH SMACNA HVAC DUCT CONSTRUCTION STANDARDS; FIGURES 2-7 AND 2-8.
- OUTLET AND INLET CONNECTIONS: COMPLY WITH SMACNA HVAC DUCT CONSTRUCTION STANDARDS; FIGURES 2-16 THROUGH 2-18.

3.5 FIELD QUALITY CONTROL:

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

3.6 FIELD QUALITY CONTROL:

- DISASSEMBLE, REASSEMBLE, AND SEAL SEGMENTS OF THE SYSTEMS AS REQUIRED TO ACCOMMODATE LEAKAGE TESTING, AND AS REQUIRED FOR COMPLIANCE WITH TEST REQUIREMENTS.
- DETERMINE LEAKAGE FROM ENTIRE SYSTEM OR SECTION OF THE SYSTEM BY RELATING LEAKAGE TO THE SURFACE AREA OF THE TEST SECTION.
- MAXIMUM ALLOWABLE LEAKAGE: AS DESCRIBED IN LATEST EDITION OF ASHRAE HANDBOOK, "FUNDAMENTALS" VOLUME.
- REMAKE LEAKING JOINTS AS REQUIRED AND APPLY SEALANTS TO ACHIEVE SPECIFIED MAXIMUM ALLOWABLE LEAKAGE.

3.7 ADJUSTING AND CLEANING:

- ADJUST VOLUME CONTROL DEVICES AS REQUIRED BY THE TESTING AND BALANCING PROCEDURES TO ACHIEVE REQUIRED AIR FLOW.
- VACUUM DUCTS SYSTEMS PRIOR TO FINAL ACCEPTANCE TO REMOVE DUST AND DEBRIS.

SECTION 15990 TESTING, ADJUSTING, AND BALANCING

PART 1 - GENERAL

1.1 DEFINITIONS:

- SYSTEMS TESTING, ADJUSTING, AND BALANCING IS THE PROCESS OF CHECKING AND ADJUSTING ALL THE BUILDING ENVIRONMENTAL SYSTEMS TO PRODUCE THE DESIGN OBJECTIVES. IT INCLUDES:
 - ADJUSTMENT OF TOTAL SYSTEM TO PROVIDE DESIGN QUANTITIES.
- TEST: TO DETERMINE QUANTITATIVE PERFORMANCE OF EQUIPMENT.
- ADJUST: TO REGULATE THE SPECIFIED FLUID FLOW RATE AND AIR PATTERNS AT THE TERMINAL EQUIPMENT (E.G., REDUCE FAN SPEED, THROTTLING).
- BALANCE: TO PROPORTION FLOWS WITHIN THE DISTRIBUTION SYSTEM (SUB-MAINS, BRANCHES, AND TERMINALS) ACCORDING TO SPECIFIED DESIGN QUANTITIES.
- PROCEDURE: STANDARDIZED APPROACH AND EXECUTION OF SEQUENCE OF WORK OPERATIONS TO YIELD REPRODUCIBLE RESULTS.
- REPORT FORMS: TEST DATA SHEETS ARRANGED FOR COLLECTING TEST DATA IN LOGICAL ORDER FOR SUBMISSION AND REVIEW. THESE DATA SHOULD ALSO FORM THE FORMAL RECORD TO BE USED AS THE BASIS FOR FUTURE TESTING, ADJUSTING, AND BALANCING.
- 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.
- MAIN: DUCT OR PIPE CONTAINING THE SYSTEM'S MAJOR OR ENTIRE FLUID FLOW.
- SUB-MAIN: DUCT OR PIPE CONTAINING PART OF THE SYSTEM'S CAPACITY AND SERVING TWO OR MORE BRANCH MAINS.
- BRANCH MAIN: DUCT OR PIPE SERVING TWO OR MORE TERMINALS.
- BRANCH: DUCT OR PIPE SERVING A SINGLE TERMINAL.

1.2 QUALITY ASSURANCE:

- AGENCY QUALIFICATIONS:
 - EMPLOY THE SERVICES OF AN INDEPENDENT TESTING, ADJUSTING, AND BALANCING AGENCY MEETING THE QUALIFICATIONS SPECIFIED BELOW TO 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.
 - 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 ARE TO BE PERFORMED, CERTIFIED BY NEBB AS A TEST AND BALANCE ENGINEER.
- CODES AND STANDARDS:
 - NEBB: "PROCEDURAL STANDARDS FOR TESTING, ADJUSTING, AND BALANCING OF ENVIRONMENTAL SYSTEMS."
 - AABC: "NATIONAL STANDARDS FOR TOTAL SYSTEM BALANCE".
 - ASHRAE: ASHRAE HANDBOOK, 1984 SYSTEMS VOLUME, CHAPTER 37, TESTING, ADJUSTING, AND BALANCING.

1.3 PROJECT CONDITIONS:

- 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:

- BEFORE OPERATING THE SYSTEM, PERFORM THESE STEPS:
 - OBTAIN DESIGN DRAWINGS AND SPECIFICATIONS AND BECOME THOROUGHLY ACQUAINTED WITH THE DESIGN INTENT.
 - OBTAIN COPIES OF APPROVED SHOP DRAWINGS OF ALL AIR HANDLING EQUIPMENT, OUTLETS (SUPPLY, RETURN, AND EXHAUST) AND TEMPERATURE CONTROL DIAGRAMS.
 - COMPARE DESIGN TO INSTALLED EQUIPMENT AND FIELD INSTALLATIONS.
 - WALK SYSTEM FROM THE SYSTEM AIR HANDLING EQUIPMENT TO TERMINAL UNITS TO DETERMINE VARIATIONS OF INSTALLATION FROM DESIGN.
 - CHECK FILTERS FOR CLEANLINESS.
 - CHECK DAMPERS (BOTH VOLUME AND FIRE) FOR CORRECT AND LOCKED POSITION, AND TEMPERATURE CONTROL FOR COMPLETENESS OF INSTALLATION BEFORE STARTING FANS.
 - 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 CROSS-CHECK WITH REQUIRED FAN VOLUMES.
 - DETERMINE BEST LOCATIONS IN MAIN AND BRANCH DUCTWORK FOR MOST ACCURATE DUCT TRAVERSES.
 - PLACE OUTLET DAMPERS IN THE FULL OPEN POSITION.
 - PREPARE SCHEMATIC DIAGRAMS OF SYSTEM "AS-BUILT" DUCTWORK PIPING LAYOUTS TO FACILITATE REPORTING.
 - LUBRICATE ALL MOTORS AND BEARINGS.
 - CHECK FAN BELT TENSION.
 - CHECK FAN ROTATION.

3.2 MEASUREMENTS:

- 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.
- PROVIDE INSTRUMENTS MEETING THE SPECIFICATIONS OF THE REFERENCED STANDARDS.
- USE ONLY THOSE INSTRUMENTS WHICH HAVE THE MAXIMUM FIELD MEASURING ACCURACY AND ARE BEST SUITED TO THE FUNCTION BEING MEASURED.
- APPLY INSTRUMENT AS RECOMMENDED BY THE MANUFACTURER.
- USE INSTRUMENTS WITH MINIMUM SCALE AND MAXIMUM SUBDIVISIONS AND WITH SCALE RANGES PROPER FOR THE VALUE BEING MEASURED.
- 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.
- TAKE ALL READINGS WITH THE EYE AT THE LEVEL OF THE INDICATED VALUE TO PREVENT PARALLAX.
- USE PULSATION DAMPENERS WHERE NECESSARY TO ELIMINATE ERROR INVOLVED IN ESTIMATING AVERAGE OF RAPIDLY FLUCTUATING READINGS.
- TAKE MEASUREMENTS IN THE SYSTEM WHERE BEST SUITED TO THE TASK.

3.3 PERFORMING TESTING, ADJUSTING, AND BALANCING:

- PERFORM TESTING AND BALANCING PROCEDURES ON EACH SYSTEM IDENTIFIED, IN ACCORDANCE WITH THE DETAILED PROCEDURES OUTLINED IN THE REFERENCED STANDARDS.
- RETEST, ADJUST, AND BALANCE SYSTEMS SUBSEQUENT TO SIGNIFICANT SYSTEM MODIFICATIONS, AND RESUBMIT TEST RESULTS.

3.4 RECORD AND REPORT DATA:

- 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.
- 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:

- PREPARE RECORD DOCUMENTS TO INDICATE INSTALLED CONDITIONS FOR:
 - 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.
 - EQUIPMENT LOCATIONS (EXPOSED AND CONCEALED), DIMENSIONED FROM PROMINENT BUILDING LINES.
 - APPROVED SUBSTITUTIONS, CONTRACT MODIFICATIONS, AND ACTUAL EQUIPMENT AND MATERIALS INSTALLED.

PART 2 - PRODUCTS (NOT APPLICABLE)

PART 3 - EXECUTION

3.1 RECORD DOCUMENTS:

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

3.2 ELECTRICAL INSTALLATIONS:

- GENERAL: SEQUENCE, COORDINATE, AND INTEGRATE THE VARIOUS ELEMENTS OF ELECTRICAL SYSTEMS, MATERIALS, AND EQUIPMENT, COMPLY WITH THE FOLLOWING REQUIREMENTS:
 - COORDINATE ELECTRICAL SYSTEMS, EQUIPMENT, AND MATERIALS INSTALLATION WITH OTHER BUILDING SYSTEMS.
 - VERIFY ALL DIMENSIONS BY FIELD MEASUREMENTS.
 - ARRANGE FOR CHASES, SLOTS, AND OPENINGS IN OTHER BUILDING COMPONENTS DURING PROGRESS OF CONSTRUCTION, TO ALLOW FOR ELECTRICAL INSTALLATIONS.
 - WHERE MOUNTING HEIGHTS ARE NOT DETAILED OR DIMENSIONED, INSTALL SYSTEMS, MATERIALS, AND EQUIPMENT TO PROVIDE THE MAXIMUM HEADROOM POSSIBLE.
 - 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.
 - INSTALL SYSTEMS, MATERIALS, AND EQUIPMENT LEVEL AND PLUMB, PARALLEL AND PERPENDICULAR TO OTHER BUILDING SYSTEMS AND COMPONENTS, WHERE INSTALLED EXPOSED IN FINISHED SPACES.
 - INSTALL ELECTRICAL EQUIPMENT TO FACILITATE SERVICING, MAINTENANCE, AND REPAIR. METAL OR REINFORCING TO OTHER BUILDING SYSTEMS AND COMPONENTS, WHERE PRACTICAL, CONNECT EQUIPMENT FOR EASE OF DISCONNECTING, WITH MINIMUM OF INTERFERENCE WITH OTHER INSTALLATIONS.
 - 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:

- GENERAL: PERFORM CUTTING AND PATCHING IN ACCORDANCE WITH THE FOLLOWING REQUIREMENTS:
 - 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.
- CUT, REMOVE, AND LEGALLY DISPOSE OF SELECTED ELECTRICAL EQUIPMENT, COMPONENTS, AND MATERIALS AS INDICATED, INCLUDING BUT NOT LIMITED TO REMOVAL OF ELECTRICAL ITEMS INDICATED TO BE REMOVED AND ITEMS MADE OBSOLETE BY THE NEW WORK.
- PROTECT THE STRUCTURE, FURNISHINGS, FINISHES, AND ADJACENT MATERIALS NOT INDICATED OR SCHEDULED TO BE REMOVED.
- PROVIDE AND MAINTAIN TEMPORARY PARTITIONS OR DUST BARRIERS ADEQUATE TO PREVENT THE SPREAD OF DUST AND DIRT TO ADJACENT AREAS.
- PROTECTION OF INSTALLED WORK: DURING CUTTING AND PATCHING OPERATIONS, PROTECT ADJACENT INSTALLATIONS.
- 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:

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

- COORDINATE THE SHUT-OFF AND DISCONNECTION OF ELECTRICAL SERVICE WITH THE OWNER.
- NOTIFY THE ENGINEER / ARCHITECT AT LEAST 5 DAYS PRIOR TO COMMENCING DEMOLITION OPERATIONS.

PROJECT NUMBER: CM225.124	SCALE: AS NOTED	DATE: 10/18/2025	DRAWN BY: K/JG	CHECKED BY: D/JF	APPROVED BY: DAL
DWG NO.					

MECHANICAL/ELECTRICAL SPECIFICATIONS FOR RE-UTILIZATION OF EXISTING BUILDING	SITUATED AT 54 OCEAN AVE AND PROMENADE BOROUGH OF BRADLEY BEACH, NJ 07720				
PROJECT NUMBER: CM225.124	SCALE: AS NOTED	DATE: 10/18/2025	DRAWN BY: K/JG	CHECKED BY: D/JF	APPROVED BY: DAL
DWG NO.					

MECHANICAL/ELECTRICAL SPECIFICATIONS FOR RE-UTILIZATION OF EXISTING BUILDING	SITUATED AT 54 OCEAN AVE AND PROMENADE BOROUGH OF BRADLEY BEACH, NJ 07720				
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DWG NO.					

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PROJECT NUMBER: CM225.124	SCALE: AS NOTED	DATE: 10/18/2025	DRAWN BY: K/JG	CHECKED BY: D/JF	APPROVED BY: DAL
DWG NO.					

PART 2 - PRODUCTS

2.1 MISCELLANEOUS METALS:

- A. STEEL PLATES, SHAPES, BARS, AND BAR GRATINGS: 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, NONSAGGUS 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 NGLIB OR ANPA RULES, OR NUMBER 3 BOARDS COMPLYING WITH SPIB RULES. LUMBER SHALL PRESERVATIVE TREATED IN ACCORDANCE WITH ANFB LP-2, AND KILN DRIED TO A MOISTURE CONTENT OF NOT MORE THAN 14 PERCENT.
B. CONSTRUCTION PANELS: PLYWOOD PANELS; APA C-D PLYWESSED INT, WITH EXTERIOR GLUE; THICKNESS AS INDICATED, OR IF NOT INDICATED, NOT LESS THAN 1/2 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 AAS "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 TO "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. LIQUDTIGHT 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 EXISTING 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 NIPPLES 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. THREE 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 LIQUDTIGHT 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 TO "NATIONAL ELECTRICAL CODE".
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 THIN/THIN INSULATION FOR ALL CONDUCTORS SIZE 500MCM AND LARGER, AND NO. 8 AWG AND SMALLER. FOR ALL OTHER SIZES PROVIDE THIN/THIN OR XHM 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 10 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-GLAD 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 GLAD 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 RATINGS 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 TORQUES REQUIREMENTS ARE NOT INDICATED, TIGHTEN CONNECTORS AND TERMINALS TO COMPLY WITH TIGHTENING TORQUES SPECIFIED IN UL 486A AND UL 486B.
L. TIGHTEN ELECTRICAL CONNECTORS AND TERMINALS, INCLUDING SCREWS AND BOLTS, IN ACCORDANCE WITH MANUFACTURER'S PUBLISHED TORQUE TIGHTENING VALUES. WHERE MANUFACTURER'S TORQUES 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 TO "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 MD 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 MD 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 9/16 INCH DEEP OUTLET BOX WITHOUT ADAPTER. GROUNDING TYPE, CLASS A, GROUP 1, PER UL STANDARD 94.3.
E. PUSHS: 20 AMPERES, 125 VOLTS, 3 WIRE GROUNDING, ARMORED CAP PUSHS, PARALLEL BLADES WITH CORD CLAMP, AND 0.4 INCH CORD HOLE; MATCH NEMA CONFIGURATION WITH POWER SOURCES.
F. PUSHS CONNECTORS: 20 AMPERES, 125 VOLTS, BAKELITE-BODY ARMORED CONNECTORS, 3 WIRE, GROUNDING, PARALLEL BLADES, DOUBLE WIRE CONTACT, WITH CORD CLAMP, AND 0.4 INCH CORD HOLE, MATCH NEMA CONFIGURATION TO MATING PUSHS. 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 MD 1.
H. COMBINATION SWITCH AND RECEPTACLE: GENERAL DUTY 3 WAY QUIET SWITCH, 20 AMPERES, 120-277 VOLTS AC, WITH TOSGLE 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-BR.

2.2 WIRING AND ACCESSORIES:

- A. WALL PLATES: SINGLE AND COMBINATION OF TYPES, SIZES, AND WITH GANGING AND GUTOUTS 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 TORQUING 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 16145 ELECTRICAL IDENTIFICATION

PART 1 - GENERAL

1.1 QUALITY ASSURANCE:

- A. ELECTRICAL COMPONENT STANDARD: COMPONENTS AND INSTALLATION SHALL COMPLY WITH NFPA TO "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 1/8 INCH MINIMUM 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, 1/8-INCH MINIMUM THICK FOR SIGNS UP TO 20 SQUARE INCHES, OR 3/8 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:

Table with 3 columns: 208/120 VOLTS, PHASE, 480/277 VOLTS. Rows include BLACK, RED, BLUE, WHITE, GREEN and A, B, C, NEUTRAL, GROUND.

MECHANICAL/ELECTRICAL SPECIFICATIONS FOR RE-UTILIZATION OF EXISTING BUILDING. Includes project number CM25.124, date 10/13/2025, and contractor M/E4. Also includes a circular logo for MPE Consulting and Design LLC.

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 TEXT, 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.
2. 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. LISTINGS 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. LISTINGS 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, RATINGS, 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 CONTACT 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 46, "LIGHTNING PROTECTION COMPONENT," OR UL 467.

2.5 GROUNDING ELECTRODES:

- A. GROUND RODS: COPPER-GLAD 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 FROM 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 PUMPS, 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 GLAMPED-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 EMBOSSED 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 4.03 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: 3 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 TOPSOILS, 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.

MECHANICAL/ELECTRICAL SPECIFICATIONS FOR RE-UTILIZATION OF EXISTING BUILDING SITUATED AT 54 OCEAN AVE AND PROMENADE BOROUGH OF BRADLEY BEACH, NJ 07720
PROJECT NUMBER: CME25.124 SCALE: AS NOTED DATE: 10/13/2025 DRAWN BY: K/JG CHECKED BY: DJF APPROVED BY: DAL
SUBMISSION: 01/02/2025 - SCHEMATIC DESIGN 10/01/2025 - REVIEW/COORDINATION 10/01/2025 - BID SET
MP CONSULTING AND DESIGN LLC 1035 N. Black Horse Pike, Suite 3 Williamstown, NJ 08094 P: (609) 875-7001 mpdesign@mpdesign.com
MP CONSULTING AND DESIGN LLC IS AN EQUAL OPPORTUNITY AND AFFIRMATIVE ACTION EMPLOYER. ALL CONTRACTORS AND SUBSIDIARIES SHALL BE REQUIRED TO PROVIDE A COPY OF THE AFFIRMATIVE ACTION PLAN TO THE PROJECT MANAGER. THE AFFIRMATIVE ACTION PLAN SHALL NOT BE CONSIDERED A PART OF THE CONTRACT. THE AFFIRMATIVE ACTION PLAN SHALL BE REPRODUCED, NOT REPRODUCED, AND SHALL BE MAINTAINED IN THE PROJECT OFFICE FOR THE DURATION OF THE PROJECT. THE AFFIRMATIVE ACTION PLAN SHALL BE REVIEWED BY THE PROJECT MANAGER AND THE PROJECT MANAGER SHALL BE RESPONSIBLE FOR OBTAINING THE AFFIRMATIVE ACTION PLAN FROM THE CONTRACTOR. THE AFFIRMATIVE ACTION PLAN SHALL BE REVIEWED BY THE PROJECT MANAGER AND THE PROJECT MANAGER SHALL BE RESPONSIBLE FOR OBTAINING THE AFFIRMATIVE ACTION PLAN FROM THE CONTRACTOR.

MECHANICAL GENERAL NOTES

SCOPE

- 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.
- 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:
 - EXHAUST SYSTEM AND ACCESSORIES
 - AUTOMATIC TEMPERATURE CONTROLS
 - DUCTWORK, DIFFUSERS, AND ACCESSORIES
 - CEILING PANEL HEATERS.
- 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

- ALL DESIGN PROFESSIONALS, CONSULTANTS, CONTRACTORS SUB-CONTRACTORS, AND VENDORS, 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, MECHANICAL 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.
- 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.
- 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.
- 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.
- ALL EQUIPMENT AND MATERIALS PROVIDED UNDER THESE SPECIFICATIONS SHALL BE LIMITED TO PRODUCTS REGULARLY PRODUCED AND RECOMMENDED FOR THE PROPOSED SERVICE.
- SUBSTITUTIONS AND/OR EQUAL PRODUCTS MUST BE APPROVED IN WRITING BY THE ENGINEER PRIOR TO INSTALLATION.
- 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.
- DO NOT SCALE THIS DRAWING FOR EXACT DIMENSIONS. VERIFY ALL FIGURES, CONDITIONS, DIMENSIONS, ETC. AT THE JOB SITE.
- ALL EXTERIOR WALL OPENINGS TO BE PROPERLY CAULKED AND SEALED WITH LOW VOLATILE ORGANIC COMPOUND SEALANT TO PREVENT INFILTRATION OF OUTSIDE AIR INTO ROOMS.
- CONTRACTOR SHALL INSTALL EXHAUST FANS, INCLUDING ALL DUCTWORK, BACK DRAFT DAMPERS, CAPS SCREENS, AND RELATED HARDWARE TO PROVIDE EXHAUST TO EXTERIOR OF BUILDING.
- 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.
- 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.
- 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 48".
- CONTRACTOR SHALL PROVIDE LOCKABLE METAL, VENTED, THERMOSTAT COVERS FOR ALL THERMOSTATS.

DEMOLITION

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

CODES AND STANDARDS

- 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.
- CONTRACTOR SHALL SECURE ALL PERMITS OR APPLICATIONS, AND PAY ANY AND ALL FEES AS REQUIRED.

BRAND NAMES, STANDARDS OF QUALITY AND PERFORMANCE

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

SUBMITTALS

- 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:
 - DIFFUSERS/GRILLES
 - EXHAUST FANS
 - DUCTWORK AND ACCESSORIES
 - CONTROLS
 - EXHAUST FANS
 - CEILING PANEL HEATERS

COORDINATION

- 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.
- CONTRACTOR IS TO COORDINATE AND PROVIDE FOR INTERIOR WALL OPENINGS FOR DUCT PENETRATIONS.
- CONTRACTOR IS TO COORDINATE WITH ELECTRICAL CONTRACTOR FOR LOCATION OF WIRING FOR EACH HVAC UNIT.
- CONTRACTOR SHALL COORDINATE AND PROVIDE FOR UNDERCUTTING AND/OR LOUVER DOOR AS INDICATED TO ALLOW ADEQUATE AIR RETURN TO AIR HANDLING UNIT.
- CONTRACTOR TO SUPPLY AND INSTALL ALL CONTROL WIRING AND THERMOSTATS AS REQUIRED.

HEATING, VENTILATION, AIR CONDITIONING UNITS

- EQUIPMENT MUST BE PURCHASED THROUGH THE LOCAL FACTORY AUTHORIZED COMMERCIAL SALES OFFICE ONLY. UNITS PURCHASED THROUGH RESIDENTIAL OR WHOLESALE DISTRIBUTORS WILL NOT BE ACCEPTED.
- 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.
- PROVIDE AND INSTALL UNITS INDICATED ON DRAWINGS AND SCHEDULES. UNITS SHALL INCLUDE APPURTENANCES NECESSARY FOR COMPLETE AND PROPER INSTALLATION.
- PROVIDE VIBRATION ISOLATION ON ALL HVAC EQUIPMENT. INSTALL IN ACCORDANCE WITH MANUFACTURERS REQUIREMENTS.

DUCTWORK

- CONTRACTOR SHALL PROVIDE AND INSTALL APPROVED FIRE DAMPERS AND ACCESS PANELS IN ANY AND ALL DUCTWORK WHICH PENETRATES A HORIZONTAL OR VERTICAL FIRE PARTITION, DEMISING WALLS, AND WHERE OTHERWISE SHOWN ON THE DRAWINGS.
- SMOOTH TURN RADIUS DUCTWORK OF DOUBLE THICKNESS TURNING VANES SHALL BE USED THROUGHOUT WHERE FLOW EXCEEDS 500 CFM.
- ALL JOINTS TO BE SEALED WITH DUCT MASTIC AND TAPE IN ACCORDANCE WITH SMACNA STANDARDS.
- ALL DUCT DIMENSIONS SHOWN ARE NET INSIDE VALUES. DIMENSIONS MAY BE CHANGED AS LONG AS NET FREE FACE AREA IS MAINTAINED.
- SUPPORT DUCTWORK AT A MAXIMUM INTERVAL OF 16'-0" AND NO MORE THAN 2'-0" FROM FITTINGS AND BRANCH TAKEOFFS.
- BRANCH DUCT SIZES SHALL MATCH DIFFUSER/GRILLE NECK (NK) DIMENSION UNLESS OTHERWISE NOTED.
- ALL BRANCH DUCTS SHALL HAVE A VOLUME DAMPER.

MECHANICAL EQUIPMENT IDENTIFICATION

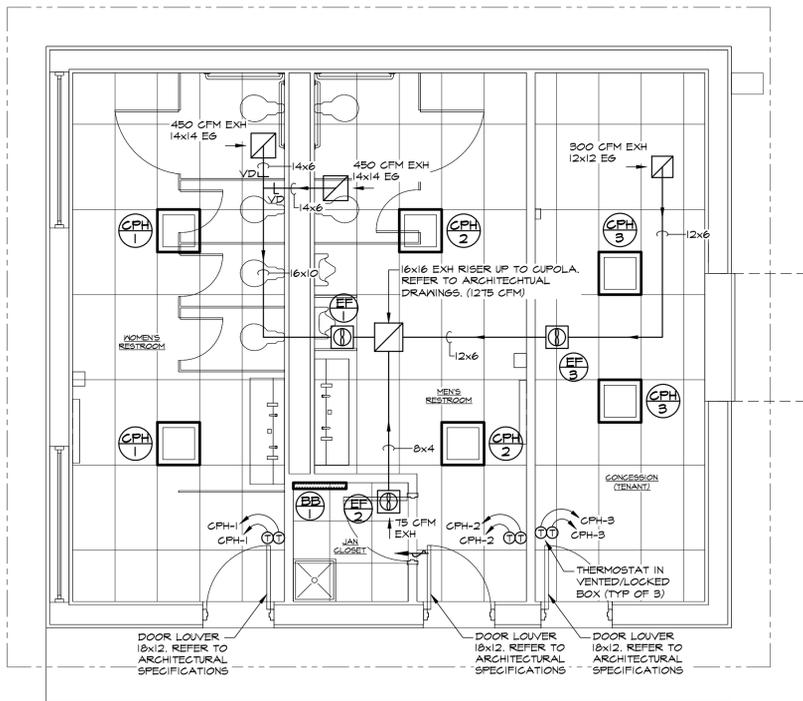
- PROVIDE STENCILED PIPE MARKERS OR PLASTIC TAPE TO IDENTIFY AIR SUPPLY, RETURN, EXHAUST, INTAKE DUCTWORK INCLUDE DIRECTION OF AIR FLOW.
- LOCATE MARKERS AT EACH BRANCH TAKE OFF AND NEAR MAJOR EQUIPMENT. MAXIMUM SPACE INTERVALS SHALL NOT EXCEED 25'-0".
- INSTALL ENGRAVED PLASTIC LAMINATE SIGN ON EACH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

TESTING AND BALANCING AIR SYSTEMS

- CONTRACTOR SHALL PROVIDE FOR BALANCING OF AIR SYSTEMS TO ACHIEVE VALUES SHOWN ON THE DRAWINGS.
- 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.
- 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

- PENETRATIONS FOR CABLES, GABLETRAYS, 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 1418.



NOTE:

- EXHAUST FANS SHALL BE INDIVIDUALLY TIME CLOCK CONTROLLED. COORDINATE WITH ELECTRICAL CONTRACTOR.

MECHANICAL FLOOR PLAN

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

EXHAUST FAN SCHEDULE

SYMBOL	MANUFACTURE MODEL NO.	CFM	S.P.	ELECTRIC		RPM	REMARKS
				VOLT	PHASE		
EF 1	COOK 1005GN1DEG	900	.1	120	1	1/4	IN-LINE FAN REFER TO NOTE #1
EF 2	COOK 9C-148	75	.5	120	1	47	CABINET FAN REFER TO NOTE #2
EF 3	COOK 905GN1DEG	300	.1	120	1	1/4	IN-LINE FAN REFER TO NOTE #1

NOTES:

- PROVIDE WITH THE FOLLOWING ACCESSORIES:
 - DISCONNECT SWITCH
 - GRAVITY DAMPER
 - INLET FLEXIBLE DUCT CONNECTION
 - OUTLET FLEXIBLE DUCT CONNECTION
 - FAN SPEED CONTROLLER
 - SET OF (4) ISOLATORS
- PROVIDE WITH THE FOLLOWING ACCESSORIES:
 - FAN SHALL HAVE INTEGRAL BACK DRAFT DAMPER
 - MOUNTING HARDWARE WITH VIBRATION ISOLATORS
 - DUCT TRANSITION
 - FAN SPEED CONTROLLER

DIFFUSERS AND GRILLES

CONTRACTOR SHALL PROVIDE THE FOLLOWING DIFFUSERS AND GRILLES OR EQUAL:

EG - TITUS MODEL 355RL 35" FIXED DEFLECTION, 1/2" SPACING

NOTES:

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

ELECTRIC CEILING PANEL HEATER SCHEDULE

SYMBOL	MANUF / MODEL #	SIZE	WATTS	BTUH	VOLT	AMPS	REMARKS
CPH 1	QMARK CP8TIF	24x24	375	1280	120	3.1	WOMEN RESTROOM - QTY. 2 REFER TO NOTE #1
CPH 2	QMARK CP8TIF	24x24	375	1280	120	3.1	MEN RESTROOM - QTY. 2 REFER TO NOTE #1
CPH 3	QMARK CP8TIF	24x24	375	1280	120	3.1	CONCESSION - QTY. 2 REFER TO NOTE #1

NOTE:

- PROVIDE WITH HONEYWELL HOME MODEL CT410B1017 LINE VOLTAGE THERMOSTAT, NON-PROGRAMMABLE, HEAT ONLY.

ELECTRIC BASEBOARD HEATER SCHEDULE

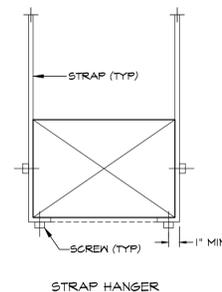
SYMBOL	MANUF / MODEL #	LENGTH	WATTS	BTUH	VOLT	AMPS	REMARKS
EB 1	QMARK QMCC25126N	30'	500	1,706	120	4.2	PROVIDE WITH BASEBOARD MOUNTED TAMPER-RESISTANT DOUBLE POLE THERMOSTAT MODEL TA2T2AM

LEGEND

- CEILING MOUNTED HEATER
- EXHAUST AIR DUCTWORK
- EXHAUST AIR DUCTWORK
- DOOR UNDERCUTTING OR LOUVER, COORDINATE WITH GC.
- EXHAUST FAN
- THERMOSTAT

ABBREVIATIONS

- CFM CUBIC FEET PER MINUTE
- CPH CEILING PANEL HEATER
- EF EXHAUST FAN
- EG EXHAUST GRILLE
- EXH EXHAUST



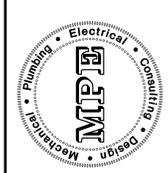
HALF OF DUCT PERIMETER (IN)	GALVANIZED STRAPS (SEE DETAILS BELOW) MINIMUM WIDTH x THICKNESS (IN)			
	MAXIMUM HANGER SPACINGS (FT)			
	10	5	4	
30	1 x 0.0246	1 x 0.0246	1 x 0.0246	1 x 0.0246
72	1 x 0.0466	1 x 0.0356	1 x 0.0246	1 x 0.0246
96	1 x 0.0575	1 x 0.0466	1 x 0.0356	1 x 0.0246
120	1/2 x 0.0575	1 x 0.0575	1 x 0.0466	1 x 0.0356
168	1/2 x 0.0575	1 x 0.0575	1 x 0.0575	1 x 0.0466
192	-	1/2 x 0.0575	1 x 0.0575	1 x 0.0575

RECTANGULAR DUCT HANGER DETAIL

N.T.S.

MECHANICAL AND DESIGN LLC
 10/19/2025 - SCHEMATIC DESIGN
 10/19/2025 - REVIEW/COORDINATION
 10/19/2025 - BID SET

MPB Consulting and Design LLC
 Certificate of Authorization No. 24GA29226300
 1035 N. Black Horse Pike, Suite 3
 Williamstown, NJ 08094
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 mpcdesign@mpbdesign.com



MECHANICAL FLOOR PLAN
 FOR
 RE-UTILIZATION OF EXISTING BUILDING
 SITUATED AT
 54 OCEAN AVE AND PROMENADE
 BOROUGH OF BRADLEY BEACH, NJ 07720

PROJECT NUMBER: CME25.124
 SCALE: AS NOTED
 DATE: 10/13/2025
 DRAWN BY: BCC
 CHECKED BY: DJF
 APPROVED BY: DAL

M1
 6 OF 10

PLUMBING GENERAL NOTES

SCOPE

- 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
- 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.
- THESE DRAWINGS END RESPONSIBILITY AT 5'-0" OUTSIDE OF BUILDING FOUNDATION WALL UNLESS OTHERWISE NOTED. COORDINATE WITH GENERAL CONTRACTOR/SITE CONTRACTOR FOR ALL FINAL CONNECTIONS.
- CONTRACTOR SHALL INSTALL PLUMBINGS EQUIPMENT IN STRICT COMPLIANCE WITH THE MANUFACTURER'S WRITTEN RECOMMENDATIONS AND INSTRUCTIONS.

GENERAL

- ALL DESIGN PROFESSIONALS, CONSULTANTS, CONTRACTORS, SUB-CONTRACTORS, AND VENDORS, 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.
- 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.
- 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.
- CONTRACTOR SHALL CONDUCT A SITE SURVEY AND VERIFY ACTUAL CONDITIONS, COORDINATE UTILITY CONNECTIONS WITH RESPECTIVE AUTHORITIES AND ADHERE TO ALL REQUIREMENTS.
- DO NOT SCALE THIS DRAWING FOR EXACT DIMENSIONS. VERIFY ALL FIGURES, CONDITIONS, DIMENSIONS, ETC. AT THE JOB SITE.
- 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.
- THE 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 ENGINEER'S OFFICE.
- THE CONTRACTOR SHALL SECURE ALL PERMITS OR APPLICATIONS AND PAY ANY AND ALL FEES REQUIRED.
- ALL PLUMBING FIXTURES SHALL BE SEPARATELY VALVED.
- ALL WATER BRANCHES AND RISERS SHALL BE SEPARATELY VALVED.
- CONTRACTOR SHALL MAKE ALL PLUMBING CONNECTIONS REQUIRED TO EQUIPMENT SUPPLIED BY OTHERS.
- CONTRACTOR SHALL BE RESPONSIBLE FOR FINAL CONNECTION OF UTILITY SERVICES WITH SITE/STREET MAINS. COORDINATE ALL WORK WITH RESPECTIVE UTILITY COMPANIES AND ADHERE TO ALL REQUIREMENTS.
- ALL PIPE PENETRATIONS THROUGH BUILDING FOUNDATIONS SHALL BE SLEEVED USING METAL WATER TIGHT PIPE SLEEVES.
- CONTRACTOR SHALL PROVIDE AND INSTALL ALL HOT & COLD WATER CONNECTIONS TO THE PLUMBING FIXTURES.
- CONTRACTOR SHALL COORDINATE WITH GENERAL CONTRACTOR FOR THE INSTALLATION OF METAL ACCESS DOORS BY MILLOR STYLE "DM" (NON FIRE RATED) OR STYLE "JFR" (1 1/2 HOUR FIRE RATED) AT ALL LOCATIONS REQUIRED TO ACCESS VALVES, DEVICES, ETC. CONCEALED ABOVE CEILINGS OR IN WALLS.
- CONTRACTOR SHALL PROVIDE WATER HAMMER ARRESTORS ON APPLIANCES/FIXTURES THAT HAVE FAST CLOSING VALVES. APPLIANCES/FIXTURES SHALL INCLUDE BUT NECESSARILY LIMITED TO CLOTHES WASHER, DISH WASHER, SELF CLOSING VALVES, PULSATING SHOWER HEADS, ETC.
- CONTRACTOR SHALL PROVIDE FOR SAN 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

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

DEMOLITION

- 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.
- CONTRACTOR SHALL REVIEW EXISTING "AS-BUILT" DRAWINGS (IF AVAILABLE) AND/OR PERFORM A SITE INSPECTION TO ESTABLISH EXTENT OF DEMOLITION PRIOR TO BID.

BRAND NAMES, STANDARDS OF QUALITY AND PERFORMANCE

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

SUBMITTALS

- SUBMIT MANUFACTURER LITERATURE TO ENGINEER'S OFFICE WHICH INDICATES THAT THE EQUIPMENT MEETS REQUIREMENTS OF THESE DRAWINGS AND SPECIFICATIONS. SUBMITTALS SHALL INCLUDE BUT NOT BE LIMITED TO:
 - HOT WATER HEATER
 - PLUMBING FIXTURES
 - PIPING AND ACCESSORIES
 - INSULATION

- COORDINATE DRAWINGS; CONTRACTOR SHALL PROVIDE FOR COORDINATION OF SHOP DRAWINGS WITH ALL BUILDING TRADES.

IDENTIFICATION

- PROVIDE STENCILED PIPE MARKERS OR PLASTIC TAPE WITH COLOR COMPLYING WITH ANSI A13.1 INCLUDE DIRECTION OF FLOW.
- LOCATE MARKERS NEAR VALVES, EACH BRANCH TAKE OFF AND NEAR MAJOR EQUIPMENT. MAXIMUM SPACING INTERVALS SHALL NOT EXCEED 50'-0".

FLUSHING AND DISINFECTING POTABLE WATER SYSTEMS

- PRIOR TO BEING PLACED INTO SERVICE, ALL POTABLE WATER SYSTEMS SHALL BE FLUSHED AND DISINFECTED IN ACCORDANCE WITH NSFC 2021, SECTION 10.9 "FLUSHING AND DISINFECTING POTABLE WATER SYSTEMS".

TESTING

- CONTRACTOR SHALL PERFORM THE FOLLOWING TESTS IN ACCORDANCE WITH NSFC 2021:
 - A. DRAINAGE AND VENT SYSTEMS - SECTION 15.4
 - ROUGH PLUMBING - SECTION 15.4.1
 - FINISHED PLUMBING - SECTION 15.4.2
 - B. BUILDING SEWER - SECTION 15.5
 - C. WATER SUPPLY SYSTEMS - SECTION 15.6

SOIL WASTE AND VENT PIPING

- SOIL WASTE PIPING AND FITTINGS SHALL BE PVC, SCHEDULE 40 DWV.
- VENT PIPING AND FITTINGS SHALL BE PVC, SCHEDULE 40 DWV.
- ALL VENT PIPING SHALL HAVE A MINIMUM SLOPE OF 1/4" PER FOOT AND SHALL DRAIN TO FIXTURES.
- 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
- FLOOR DRAINS AND FLOOR SINKS SHALL BE PROVIDED WITH 4" DEEP TRAP TRAP SEAL AND RectorSeal SureSeal MODEL #55XX09V INLINE FLOOR DRAIN TRAP SEAL. (ASSE 1072).
- SUPPORT PIPING AT MAXIMUM 4'-0" INTERVALS.
- CONTRACTOR SHALL PROVIDE AN IN-LINE MANUAL SHUT-OFF GATE/BACKWATER VALVE EQUAL TO JR SMITH #160 ON THE SEWER LATERAL DOWNSTREAM OF THE LAST FIXTURE CONNECTION. PROVIDE WITH EXTENSIONS AS NEEDED.

INSULATION

- ALL HOT AND COLD WATER PIPING TO BE INSULATED WITH A MINIMUM OF 1" FIBERGLASS JACKETED INSULATION (ASTM A584, CLASS 1) WITH A FLAME SPREAD RATINGS OF 25 AND SMOKE DEVELOPED RATINGS OF 50.
- PROVIDE 2" FIBERGLASS INSULATION ON COLD WATER PIPING CONCEALED IN ATTICS, EXTERIOR WALLS AND IN CRACK SPACES.

WATER PIPING

- 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.
- SUPPORT PIPING AT MAXIMUM 5'-0" INTERVALS FOR PIPING UP TO 2" AND AT 8'-0" INTERVALS FOR 2 1/2" AND UP.
- DOMESTIC HOT WATER TEMPERATURES SHALL BE AS FOLLOWS:
 - HAND WASHING FACILITIES - 105°F
 - SERVICE/MOP SINKS - 120°F
- PROVIDE POINT OF USE THERMOSTATIC MIXING VALVES AS INDICATED. MAXIMUM SET POINT SHALL BE 105°F.
 - LAVATORIES IN TOILET ROOMS
- 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.

WATER HEATER

- CONTRACTOR SHALL PROVIDE A BRONZE THERMOSTATIC MIXING VALVE ON ALL WATER HEATERS.
- PROVIDE TEMPERATURE PRESSURE RELIEF VALVE AND DISCHARGE PIPE FOR WATER HEATER.
- PROVIDE VACUUM BREAKER ON COLD WATER SUPPLY TO WATER HEATERS.
- CONTRACTOR SHALL PROVIDE A DRIP PAN FOR ALL WATER HEATERS. METALLIC PANS SHALL BE 24 GAGE MINIMUM AND NON-METALLIC PANS SHALL BE 0.025 INCH MINIMUM THICKNESS. PANS SHALL BE NOT LESS THAN 1 1/2" DEEP. PAN OUTLET SHALL BE 3/4" AND DRAIN TO POINT OF DISCHARGE AS SHOWN ON THE DRAWINGS.

ESCUTCHEONS

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

BARRIER FREE REQUIREMENT

- ALL EXPOSED WASTE AND WATER PIPING WITHIN A BARRIER FREE BATHROOM SHALL BE INSULATED WITH A PRODUCT EQUAL TO IFS 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

- 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.

TANKLESS HOT WATER HEATER SCHEDULE											
SYMBOL	MANUFACTURER/ MODEL #	GPM FLOW @ 53°F RISE	CONN.	WEIGHT (LBS.)	NUMBER OF ELEMENTS	WATTS PER ELEMENT	TOTAL WATTS	VOLT	PHASE	AMP	REMARKS
HWH-1	EEMAX EEM24018	23	3/4"	113	2	9,000	18,000	240	1	75	ELECTRIC TANKLESS WATER HEATER

NOTES:

- INSTALLATION SHALL BE IN STRICT COMPLIANCE WITH THE MANUFACTURER'S WRITTEN INSTRUCTIONS.

HOT WATER HEATER SCHEDULE							
SYMBOL	MANUFACTURER/ MODEL #	CAPACITY (GALLON)	GALLON RECOVERY @ 100°F RISE	WATTS	VOLT	PHASE	REMARKS
HWH-2	BRADFORD WHITE LE280LNS-3	28	18	4,500	208	1	LIGHT DUTY COMMERCIAL LOWBOY ENERGY SAVER ELECTRIC WATER HEATER

NOTES:

- PLUMBING CONTRACTOR SHALL PROVIDE HOLDRITE OR EQUAL # 5NH-P WALL MOUNTING BRACKET AND HARDWARE.
- PROVIDE T&P VALVE AND DISCHARGE PIPING

PLUMBING FIXTURE SCHEDULE										
SYMBOL	TYPE OF EQUIPMENT	MANUF./MODEL#	DRAIN	VTR	HMS	CWS	SFU	DFU	DESCRIPTIONS	
LAV	LAVATORY	BRADLEY REFER TO NOTE #1	1 1/4"	1 1/4"	1/2"	1/2"	1.0	1.0	"VERSE" WASH BASIN - 2 STATIONS	
WC	WATER CLOSET	AMERICAN STANDARD #3043.001	3"	1 1/2"	-	1"	5.0	4.0	1/28 GALLON FLUSH VALVE TOILET, FLOOR MOUNTED 1 1/2" TOP SPRD, W/ OPEN FRONT SEAT #5901.100 AND SLOAN FLUSH VALVE #111 E55-1/28-TMO-HH	
WC-1	BARRIER FREE WATER CLOSET	AMERICAN STANDARD #3043.001	3"	1 1/2"	-	1"	5.0	4.0	1/28 GALLON FLUSH VALVE TOILET, FLOOR MOUNTED 1 1/2" TOP SPRD, W/ OPEN FRONT SEAT #5901.100 AND SLOAN FLUSH VALVE #111 E55-1/28-TMO-HH	
UR	BARRIER FREE URINAL	AMERICAN STANDARD #6590.001	2"	1 1/2"	-	3/4"	4.0	4.0	0.5 GALLON VITREOUS CHINA WALL HUNG, 3/4" TOP SPRD, AND SLOAN FLUSH VALVE #106 E55-0.5-TMO-HH	
UR-1	BARRIER FREE URINAL	AMERICAN STANDARD #6590.001	2"	1 1/2"	-	3/4"	4.0	4.0	0.5 GALLON VITREOUS CHINA WALL HUNG, 3/4" TOP SPRD, AND SLOAN FLUSH VALVE #106 E55-0.5-TMO-HH	
MS	MOP SINK	FIAT #M5B2424	3"	1 1/2"	1/2"	1/2"	3.0	3.0	CUSTODIAL MOP SINK, W/ MOP HOLDER #864CC, HOSE AND HOSE BRACKET #832AA, AND DELTA FAUCET #28C2384	
CO	CLEANOUT	ZURN #21400	--	--	--	--	--	--	DURA-COATED CAST IRON CLEANOUT WITH ROUND ADJUSTABLE SCORRIATED SECURED NICKEL BRONZE TOP	
FD	FLOOR DRAIN	ZURN #24195-Y	3"	1 1/2"	-	-	-	3.0	DURA-COATED CAST IRON BODY W/ INVERTIBLE MEMBRANE CLAMP, ADJUSTABLE COLLAR, HEEL-PROOF STRAINER AND SEDIMENT BUCKET ENCLOSED, AUTOMATIC DRAINING, NON-FREEZE, INTEGRAL ANTI-SIPHON VACUUM BREAKER/ BACKFLOW PREVENTER, KEY OPERATED	
HB	HOSE BIBB	ZURN #21320-EZ	--	--	--	3/4"	2.5	--		

NOTES:

- LAV-2 MODEL #LYLD2 558-3100 R T 5 XX AG 6-3100 R F T XX AC XX STAIN S-POLY
 - TWO STATION LAVATORY
 - AC POWERED TOUCH-FREE FAUCET
 - THERMOSTATIC MIXING ASSEMBLY
 - AC POWERED TOUCH-FREE FOAM SOAP DISPENSER
- CONTRACTOR SHALL PROVIDE JAY R SMITH 0600 SERIES OR EQUAL FLOOR MOUNTED FIXTURE SUPPORT FOR ALL URINALS.
- FLOOR DRAINS SHALL BE PROVIDED WITH 4" DEEP TRAP TRAP SEAL AND RectorSeal SureSeal MODEL #55XX09V INLINE FLOOR DRAIN TRAP SEAL (ASSE 1072).
- ALL COLOR AND FINISH SELECTIONS BY ARCHITECT/OWNER.

GREASE INTERCEPTOR SCHEDULE						
SYMBOL	MANUFACTURER/ MODEL #	FLOW (GPM)	CAPACITY (LBS)	INLET	OUTLET	REMARKS
GREASE TRAP	JR SMITH 8050 SERIES	50	100	3"	3"	2" CO. PLUS STEEL INTERCEPTOR W/ GRAY DUGO COATING INSIDE AND OUTSIDE AND FLOW CONTROL FITTING

NOTE:

- SIZING IN COMPLIANCE WITH N.S.P.C. SECTION 6.2.10(A) INTERCEPTOR SIZING:
 - (1) FLOOR SINK WITH (2) 1 1/2" INDIRECT WASTE AT 15 GPM EACH = 30 GPM TOTAL

PROJECT NUMBER: CME25.124
SCALE: AS NOTED
DATE: 10/13/2025
DRAWN BY: BCC
CHECKED BY: DJF
APPROVED BY: DAL

P2

DWG NO. 8 OF 10

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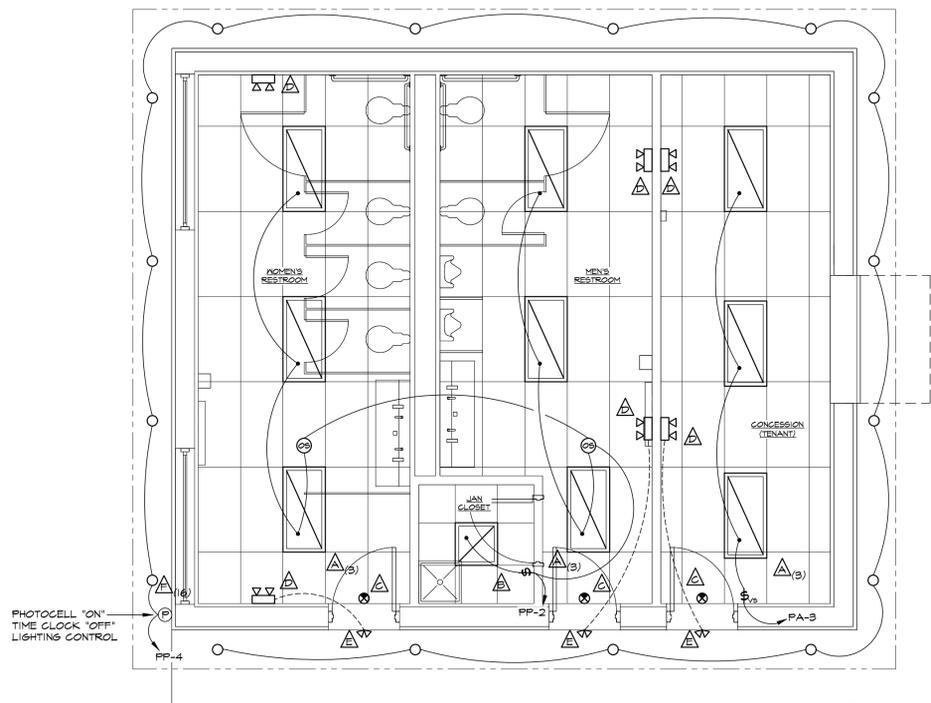
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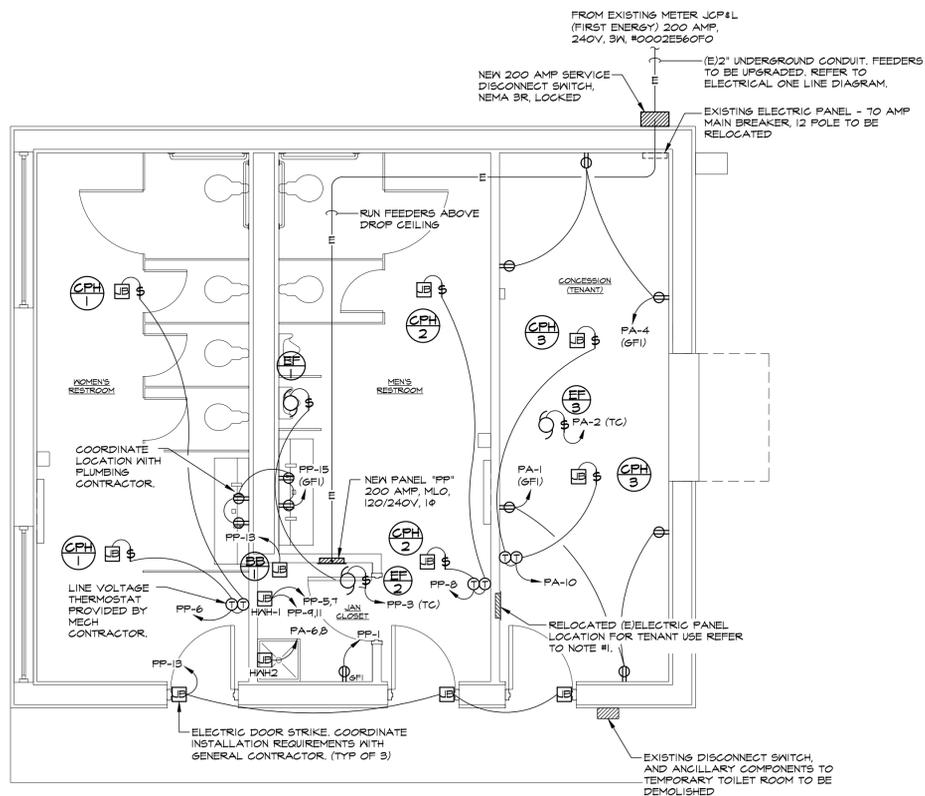
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MP E CONSULT



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



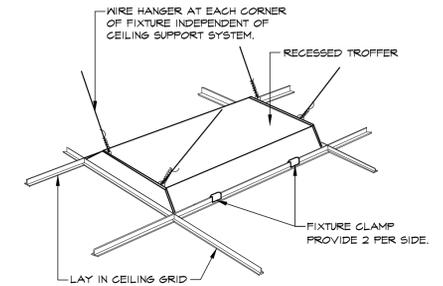
POWER FLOOR PLAN
SCALE: 1/4" = 1'-0"

LEGEND	
	SPECIFICATION GRADE DUPLEX RECEPTACLE
	SPECIFICATION GRADE GROUND FAULT INTERRUPTER
	JUNCTION BOX
	SPECIFICATION GRADE SINGLE POLE SWITCH
	WALL SWITCH OCCUPANCY SENSOR
	CEILING MOUNTED OCCUPANCY SENSOR
	PHOTOCELL
	LIGHTING FIXTURE (TYPE 'X' SEE SCHEDULE)
	MOTOR
	RECESS CEILING LIGHT FIXTURE
	REMOTE LIGHT FIXTURE
	EMERGENCY FIXTURE
	PANEL
	ELECTRICAL CONDUIT
	EXHAUST FAN
	WEATHER PROOF
	EXISTING TO REMAIN UNLESS OTHERWISE NOTED

- NOTES:**
- CONTRACTOR SHALL PROVIDE FOR ALL WIRING, CONDUIT, ACCESSIBLE JUNCTION BOXES, AND ALL ANGLIARY COMPONENTS TO RELOCATE EXISTING PANEL AS INDICATED.
 - PROVIDE FOR NEW PANEL COVER FOR RECESSED MOUNTING OF PANEL.
 - CONTRACTOR SHALL RELOCATE EXISTING SPRINKLER CONTROL PANEL TO JANITOR CLOSET. PROVIDE CIRCUIT FROM NEW PANEL "PP" AS INDICATED.

LIGHTING FIXTURE SCHEDULE								
FIXTURE	MANUFACTURER	MODEL No.	LAMPS		VOLTAGE	TYPE	MOUNTING	REMARKS
			No.	WATTS				
A	COLUMBIA LIGHTING	CBT24-A-LSCS	1	36	120	LED	RECESSED	2x4 EDGE-LIT FLAT PANEL, SWITCHABLE LUMENS/CCT, 3500K, 4400 LUMENS
B	COLUMBIA LIGHTING	CBT22-A-LSCS	1	26	120	LED	RECESSED	2x2 EDGE-LIT FLAT PANEL, SWITCHABLE LUMENS/CCT, 3500K, 3900 LUMENS
C	LIGHTALARMS	WXXVE-1-R-D-4X	1	3.7	120	LED	SURFACE	WALL MOUNTED EXIT SIGN WITH RED LETTERS, VANDAL RESISTANT.
D	LIGHTALARMS	2V12N2/LDI-M-D	2	4	120	LED	WALL	WALL MOUNTED EMERGENCY LIGHTING, VANDAL RESISTANT.
E	LIGHTALARMS	ELF650/LDI-MI2	2	4	120	LED	WALL	WALL MOUNTED REMOTE HEAD VANDAL RESISTANT.
A	FRESCOLITE	LB6E5-6RD-CS4-WH	1	13	120	LED	RECESSED	6" EDGE-LIT ROUND DOWNLIGHT, 3500K SWITCHABLE CCT, 1175 LUMENS

LIGHTING CONTROL SCHEDULE	
	LEVITON WALL SWITCH PIR VACANCY SENSOR MODEL #QDS15-1IN CONTRACTOR SHALL BE RESPONSIBLE FOR CONFIGURING SENSOR TO OPERATE IN VACANCY MODE
	LEVITON MULTI-TECHNOLOGY (INFRARED AND ULTRASONIC) CEILING MOUNTED OCCUPANCY SENSOR MODEL #QSC20-MOM
	LEVITON OUTDOOR WALL MOUNTED PHOTOCELL SENSOR MODEL #RCOUT-SV
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 LIGHTING SHALL BE AUTOMATICALLY SHUT OFF WITHIN 20 MINUTES OF ALL OCCUPANTS LEAVING THE SPACE.	



TYPICAL RECESSED FIXTURE MOUNTING DETAIL
N.T.S

PROJECT NUMBER: CME25.124
SCALE: AS NOTED
DATE: 10/13/2025
DRAWN BY: KM
CHECKED BY: DJF
APPROVED BY: DAL

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MPB CONSULTING AND DESIGN LLC
REGISTERED PROFESSIONAL ENGINEER NO. 74681
REGISTERED PROFESSIONAL ENGINEER NO. 38281
REGISTERED PROFESSIONAL ENGINEER NO. 7084

DATE: _____

Daniel A. Loveland Sr., P.E.

RE-UTILIZATION OF EXISTING BUILDING
SITUATED AT
54 OCEAN AVE AND PROMENADE
BOROUGH OF BRADLEY BEACH, NJ 07720

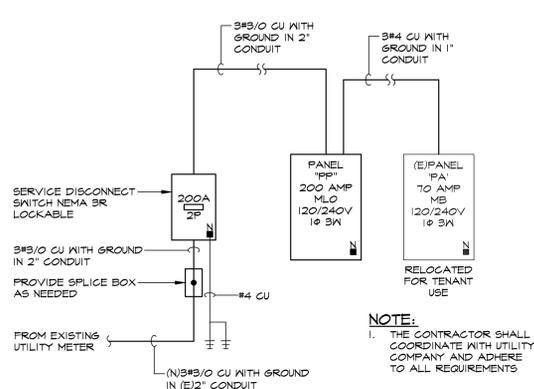
FOR
LIGHTING AND POWER FLOOR PLANS



PANEL No. FP		LOCATION: JAN CLOSET				VOLTAGE: 120/240								
FRAME RATING: 200 AMP		MAIN BKR. RATING: MLO				PHASE: 1Ø 3Ø								
DESCRIPTION: SQ 'D' CO., 00 SERIES, W/GRD BAR KIT AND LOCKABLE COVER SERIES RATED COMBINATION PANEL														
SIZE		CIRCUIT DESCRIPTION				LOAD		CIRCUIT DESCRIPTION		SIZE				
B	W					B	W							
20	12	JAN CLOSET RECEPTACLE				200	1 2	400	BATHROOM LIGHTING CIRCUIT				20	12
20	12	EXHAUST FANS				400	3 4	300	EXTERIOR SOFFIT LIGHTING CIRCUIT				20	12
40	8	HWH-2 (ELEMENT 1 OF 2)				4000	5 6	750	WOMEN RR HEATING PANEL				20	12
40	8	HWH-2 (ELEMENT 2 OF 2)				4000	9 10	50	(E) IRRIGATION PANEL				15	12
40	8	HWH-2 (ELEMENT 2 OF 2)				4000	11 12	200	(E) TICKET BOOTH				15	12
20	12	JAN CL BB-1				500	13 14	--	SPACE				--	--
15	12	LAV FAUCET CONTROL				50	15 16	--	SPACE				--	--
20	--	SPARE				--	17 18	--	SPACE				--	--
20	--	SPARE				--	19 20	--	SPACE				--	--
--	--	SPACE				--	21 22	4500	SUB PANEL 'FA'				70	4
--	--	SPACE				--	23 24	-----	-----				70	4
						25 26								
						27 28								
						29 30								
						31 32								
						33 34								
						35 36								
						37 38								
						39 40								
						41 42								
TOTAL CONNECTED LOAD (KW)		19.2	31.2	12.0	TOTAL CONNECTED LOAD (KW)									

ELECTRIC LOAD SUMMARY
TOTAL CONNECTED = 31.2 KW
31.2 KW X 1000/240V = 130.0 AMPS X 125% = 162.5 AMPS

- *NOTES:**
- LIGHTING CONTROL SHALL BE PHOTOCLOCK 'ON' TIME CLOCK 'OFF'.
 - PROVIDE PROGRAMMABLE TIME CLOCK CONTROL EQUAL TO INTERMATIC MODEL #ET210SC, 1 DAY/365 DAY, 1 CIRCUIT, ELECTRONIC CONTROL, 120-2TTV, SPST, INDOOR METAL ENCLOSURE.
 - PROVIDE FOR BRANCH CIRCUIT TO EXISTING TICKET BOOTH (REFEED).



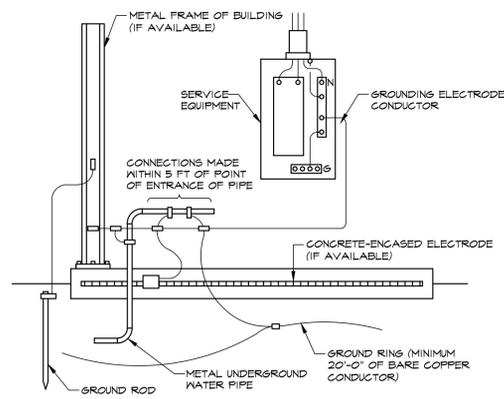
ELECTRICAL ONE LINE DIAGRAM
N.T.S.

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

PANEL No. (E)FA		LOCATION: CONCESSION				VOLTAGE: 120/240V								
FRAME RATING: 125 AMP		MAIN BKR. RATING: 70 AMP				PHASE: 1Ø 3Ø								
DESCRIPTION: EXISTING EATON														
SIZE		CIRCUIT DESCRIPTION				LOAD		CIRCUIT DESCRIPTION		SIZE				
B	W					B	W							
20	12	CONCESSION RECEPTACLES				600	1 2	50	CONCESSION EXHAUST FAN - TC				20	12
20	12	CONCESSION LIGHTING CIRCUIT				200	3 4	600	CONCESSION RECEPTACLES				20	12
--	--	SPACE				--	5 6	4500	HWH-1				30	10
--	--	SPACE				--	7 8	-----	-----				30	10
70	4	(E)MAIN CIRCUIT BREAKER				-----	9 10	750	HEATING PANELS				20	12
70	4	-----				-----	11 12	--	SPACE				--	--
						13 14								
						15 16								
						17 18								
						19 20								
						21 22								
						23 24								
						25 26								
						27 28								
						29 30								
						31 32								
						33 34								
						35 36								
						37 38								
						39 40								
						41 42								
TOTAL CONNECTED LOAD (KW)		0.8	6.7	5.9	TOTAL CONNECTED LOAD (KW)									

ELECTRIC LOAD SUMMARY (ESTIMATED)
TOTAL CONNECTED = 6.7 KW
FUTURE AT 14W/5F = 2.8 KW
9.5 KW X 1000/240V = 39.6 AMPS X 125% = 49.5 AMPS

- *NOTES:**
- PROVIDE FOR GFCI TYPE CIRCUIT BREAKER.
 - PROVIDE PROGRAMMABLE TIME CLOCK CONTROL EQUAL TO INTERMATIC MODEL #ET210SC, 1 DAY/365 DAY, 1 CIRCUIT, ELECTRONIC CONTROL, 120-2TTV, SPST, INDOOR METAL ENCLOSURE.



- NOTES:**
- CONTRACTOR SHALL PROVIDE ALL AVAILABLE GROUNDING POINTS, BONDED TOGETHER TO FORM THE GROUNDING ELECTRODE SYSTEM.
 - GROUND ROD SHALL HAVE A RESISTANCE TO GROUND OF 25 OHMS OR LESS. PROVIDE ADDITIONAL GROUND ROD IN ACCORDANCE WITH N.E.C. 250.66 WHERE OHMS EXCEED 25.
 - METAL PIPING SYSTEM(S) INSTALLED IN OR ATTACHED TO A BUILDING OR STRUCTURE, INCLUDING GAS PIPING, THAT IS LIKELY TO BECOME ENERGIZED SHALL BE BONDED IN ACCORDANCE WITH N.E.C. 250.104(B).

GROUNDING DETAIL
N.T.S.

ELECTRICAL GENERAL NOTES

- SCOPE**
- CONTRACTOR SHALL PROVIDE ALL POWER AND LIGHTING AS INDICATED ON THESE DOCUMENTS AND AS OTHERWISE REQUIRED TO SATISFY COMPLETE AND OPERATIONAL SYSTEMS AS INTENDED.
 - 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**
- ALL DESIGN PROFESSIONALS, CONSULTANTS, CONTRACTORS, SUB-CONTRACTORS, AND VENDORS, 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.
 - 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.
 - 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.
 - THE CONTRACTOR IS RESPONSIBLE FOR ALL MATERIAL AND LABOR TO SATISFY A COMPLETE AND WORKING SYSTEM WHETHER SPECIFIED OR IMPLIED.
 - THE CONTRACTOR SHALL SECURE ALL PERMITS OR APPLICATIONS AND PAY ANY AND ALL FEES REQUIRED.
 - 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.
 - CONTRACTOR TO CONFIRM EXACT LOCATION OF EXISTING AND NEW EQUIPMENT WITH OWNER'S AGENTS.
 - CONTRACTOR TO MAKE ALL ELECTRICAL CONNECTIONS TO EQUIPMENT SUPPLIED BY OTHERS.
 - DO NOT SCALE THIS DRAWING FOR EXACT DIMENSIONS. VERIFY ALL FIGURES, CONDITIONS, DIMENSIONS, ETC. AT THE JOB SITE.
 - 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.
 - RELOCATE EXISTING CIRCUITS AS REQUIRED.
 - PROVIDE CIRCUITING TO ALL EXISTING EXTERIOR LIGHTING NOT OTHERWISE NOTED ON THESE DRAWINGS.
 - LIGHT FIXTURES INSTALLED IN SUSPENDED CEILING SHALL BE INDEPENDENTLY SUPPORTED FROM BUILDING STRUCTURE.
 - CONTRACTOR SHALL REFER TO ALL DRAWINGS FOR INFORMATION, SPECIFICATIONS, AND/OR INSTRUCTIONS RELATIVE TO THE PROJECT SCOPE OF WORK.
 - THIS CONTRACTOR SHALL COORDINATE ALL WORK WITH A COMPLETE SET OF M/P/E AND ARCHITECTURAL DRAWINGS. IMMEDIATELY REPORT ANY DISCREPANCIES TO THE ENGINEER'S OFFICE.
 - SERVICE EQUIPMENT IN OTHER THAN DWELLING UNITS SHALL BE LEGIBLY MARKED IN THE FIELD WITH MAXIMUM AVAILABLE FAULT CURRENT. FIELD MARKINGS SHALL INCLUDE THE DATE THE FAULT-CURRENT CALCULATION WAS PERFORMED.
 - CONTRACTOR SHALL BE RESPONSIBLE FOR FULL COMPLIANCE WITH MANUFACTURERS WRITTEN INSTALLATION REQUIREMENTS AND RECOMMENDATIONS.

- CODES AND STANDARDS**
- 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 8:29-3.16, STATE LAWS, LOCAL CODES, AND ALL OTHER REGULATIONS GOVERNING WORK OF THIS NATURE.
- BRAND NAMES, STANDARDS OF QUALITY AND PERFORMANCE**
- 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.
 - 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.
 - SUBSTITUTES AND "OR EQUAL" SUBMISSIONS MUST BE APPROVED IN WRITING BY ENGINEER PRIOR TO SUBMISSION OF BID.
- SUBMITTALS**
- SUBMIT MANUFACTURERS LITERATURE TO ENGINEER'S OFFICE WHICH INDICATES THAT THE EQUIPMENT MEETS REQUIREMENTS OF THESE DRAWINGS AND SPECIFICATIONS. SUBMITTALS SHALL INCLUDE BUT NOT BE LIMITED TO:
 - LIGHTING FIXTURES
 - PANELS
 - LIGHTING CONTROLS
 - DEVICES AND COVER PLATES

- WIRING METHOD**
- 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
 - 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.
 - ALL CONDUCTORS SHALL BE XHHW-2 COPPER W/90°C INSULATION OR GREATER.
- DEMOLITION**
- 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.
 - CONTRACTOR SHALL REVIEW EXISTING "AS-BUILT" DRAWINGS (IF AVAILABLE) AND PERFORM SITE INSPECTION TO ESTABLISH EXISTENCE OF DEMOLITION PRIOR TO BID.
- LOAD CENTERS, PANELBOARDS, SWITCHGEAR**
- ALL PANELS SHALL BE PROVIDED WITH MANUFACTURER'S SERIES RATED MAINS AND BRANCH CIRCUIT BREAKERS BASED ON THE AVAILABLE FAULT CURRENT CALCULATIONS.
 - CONTRACTOR SHALL VERIFY SERVICE AIC RATINGS FROM UTILITY COMPANY AND SUBMIT POINT-TO-POINT FAULT CURRENT CALCULATIONS WITH EACH PANEL SUBMISSION.
- ELECTRICAL EQUIPMENT IDENTIFICATION**
- INSTALL ENGRAVED PLASTIC LAMINATE SIGN ON EACH MAJOR ITEM OF ELECTRICAL EQUIPMENT INDICATING THE EQUIPMENT'S DESIGNATION AND AREA/SITE SERVED.
 - 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**
- ALL DEVICES SHALL BE 20 AMP UNLESS OTHERWISE NOTED.
 - RECEPTACLE AND SWITCH PLATES SHALL BE METAL.
 - PROVIDE ACCESSIBLE SPLICE/JUNCTION BOXES AS NEEDED.
 - EXTERIOR RECEPTACLES SHALL BE HUBBELL OR EQUAL #MM2420C NEMA 3R RATED NON-METALLIC IN-USE COVER, WITH HUBBELL 6FRS120B, 20 AMP, 120V, GFCI DEVICE.
 - ALL EQUIPMENT INSTALLED OUTDOORS SHALL BE NEMA 3R RATED.
 - 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.
 - COUNTERTOP RECEPTACLES
 - 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".
 - EMERGENCY LIGHTS
 - 96" ABOVE FINISHED FLOOR OR 6" BELOW FINISHED CEILING WHICHEVER IS LOWER.
 - REMOTE EMERGENCY HEADS
 - 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.
- FIRESTOP**
- 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.

PROJECT NUMBER: CME25.124
 SCALE: AS NOTED
 DATE: 10/13/2025
 DRAWN BY: KM
 CHECKED BY: DJF
 APPROVED BY: DAL

DWG NO. E2
 10 OF 10

LIGHTING AND POWER FLOOR PLANS FOR RE-UTILIZATION OF EXISTING BUILDING SITUATED AT 54 OCEAN AVE AND PROMENADE BOROUGH OF BRADLEY BEACH, NJ 07720

MPE CONSULTING AND DESIGN LLC
 CERTIFICATE OF AUTHORIZATION NO. 24G022252500
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SUBMISSION: 01/10/2025 - SCHEMATIC DESIGN, 10/10/2025 - REVIEW/COORDINATION, 10/13/2025 - BID SET

MPE CONSULTING AND DESIGN LLC
 REGISTERED PROFESSIONAL ENGINEER NO. 7746
 REGISTERED PROFESSIONAL ENGINEER NO. 38281
 REGISTERED PROFESSIONAL ENGINEER NO. 38281
 REGISTERED PROFESSIONAL ENGINEER NO. 7034

Daniel A. Loveland Sr., P.E.
 DATE: