CAPE MAY CITY
PUBLIC RESTROOMS

702 BEACH AVENUE
CAPE MAY, NEW JERSEY

DRAWING LIST

SCOPE OF WORK

- New restroom located on the East side of a one story existing building.
- ~~Two exterior shower towers . Each tower with two showers and one foot spray. These towers will be located on the boardwalk adjacent to the building.~~

CODE ANALYSIS

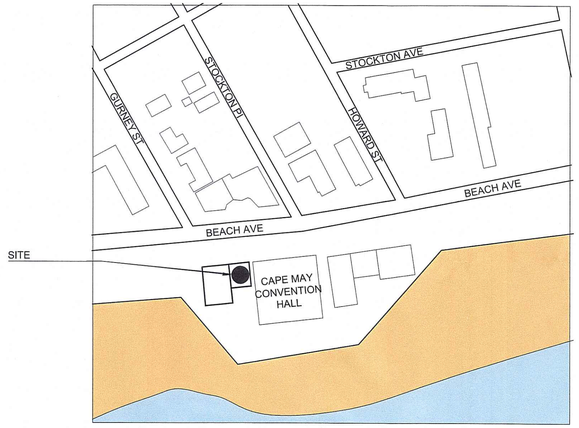
- Use Group: B
- Construction Type: V-B
- Type of Work: Alteration

Governing Code:
NJ Rehabilitation Code Ed. 2021
Barrier Free Subcode ICC A117.1-2017

- LIVE LOADS
  Floor: 100 psf
- Total Building Area: 2,474 s.f
- Work Area: 607 s.f. Restroom area

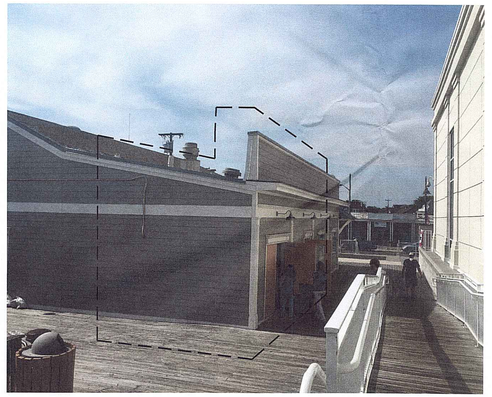
GENERAL NOTES

- Architectural service provided in these drawings is limited to room arrangement, dimensions and construction details as shown.
- The Architect will not be responsible where construction deviates from depicted or implied information without authorization by the Architect.
- Construction shown and specified shall conform to all applicable building codes.
- All contractors and sub contractors are responsible for adhering to the requirements as spelled out in these notes. All parties must carefully study all notes for items which may pertain to their trades. Failure to read the notes does not permit the contractor to deviate from their requirements
- General contractor shall verify all conditions and check all measurements on job and shall be responsible for same and if any deviations are found the architect shall be immediately notified of any discrepancies
- All opening in walls, floors, ceiling, roofs, etc., to be located and sized as per mechanical and architectural requirements, even if not shown as such, on drawings.
- Owner or contractor shall provide signed and sealed structural drawings for the installation of any new roof top equipment. The design to be in compliance with all applicable codes and regulations.
- All walls shall be adequately braced until the entire structural frame has been installed and is structurally sound.
- All contractors and sub contractors on this project shall be responsible for the proper performance of their work, coordination with other trades, methods, safety and security on the job site.
- Contractor shall visit site prior to commencement and verify location and nature of existing items that can affect the work. architect and owner shall be notified of any discrepancy before proceeding.
- Grades and elevations shown on plans are approximate and should be checked at the site, prior to construction.
- Contractor shall not scale any dimensions from the drawings.
- Contractor to verify location of all utilities including sanitary sewer, gravity and force water mains, gas, and electric prior to excavation, and or construction.



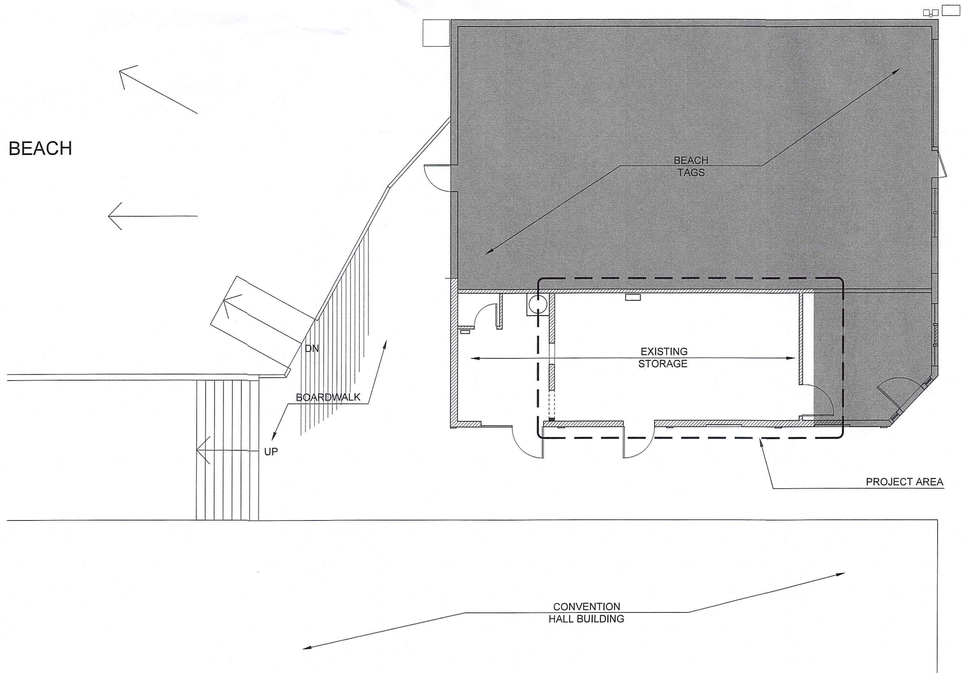
1 / A-1 LOCATION MAP
N.T.S.

NORTH



2 / A-1 SOUTH-EAST PICTURE 1
N.T.S.

3 / A-1 NORTH-EAST PICTURE 2
N.T.S.



4 / A-1 PROJECT DIAGRAM PLAN
N.T.S.

NORTH

DRAWING #: A-1 SHEET 1 OF 8

SIGNATURE

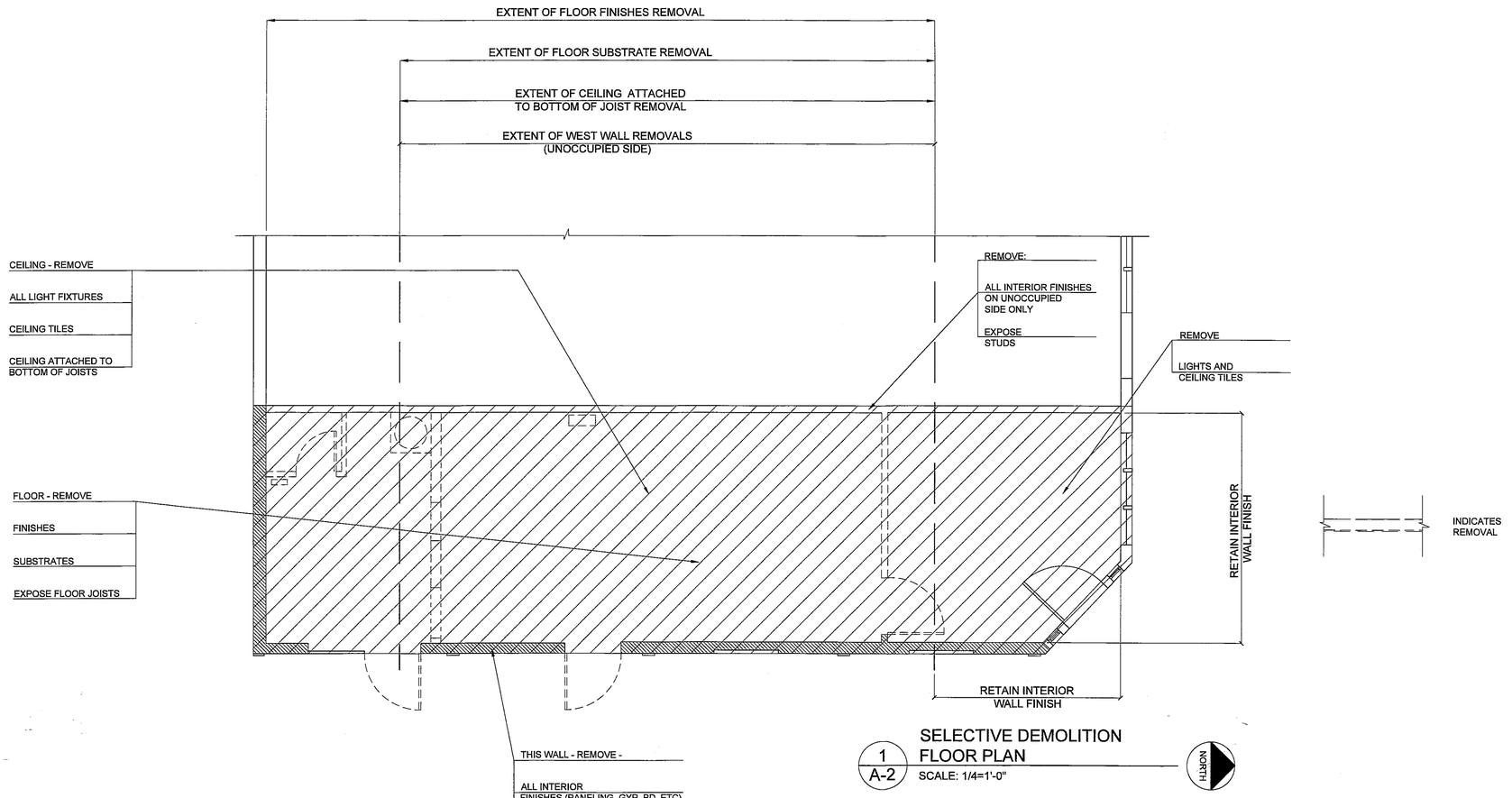
DRAWN BY: JB
SCALE: AS NOTED
DATE: APRIL 10- 2023
JOB : CITY OF CAPE MAY

DRAWING TITLE: COVER SHEET

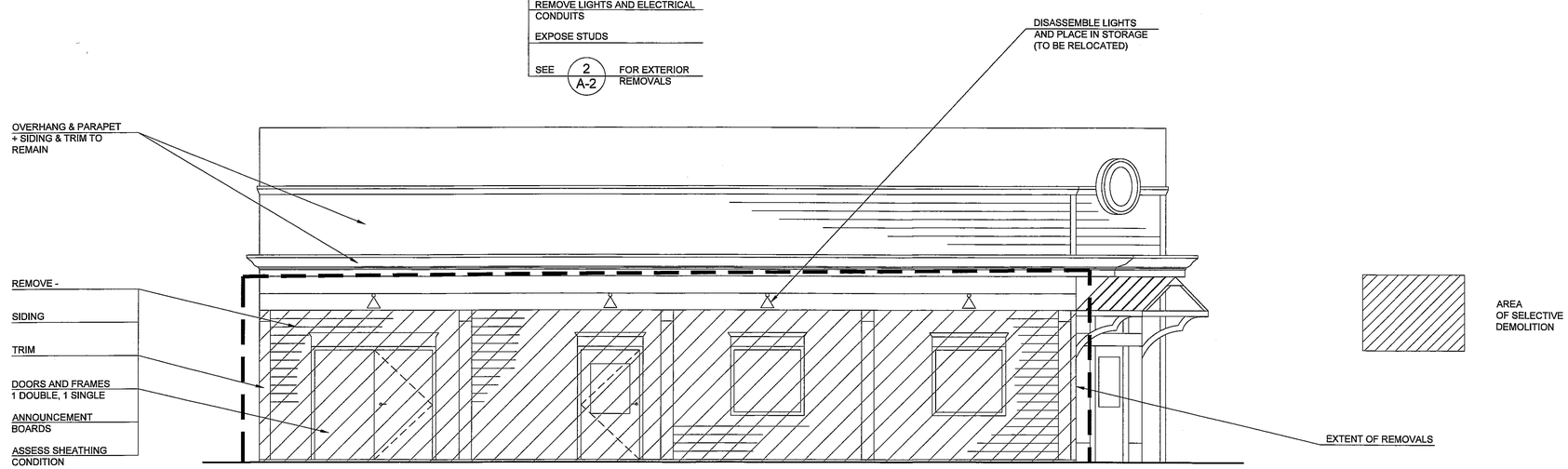
NEW PUBLIC RESTROOMS
THE CITY OF CAPE MAY
702 BEACH AVE
CAPE MAY, NJ.

maria cerda-moreno architect
14 West Commerce St.
Bridgeton, New Jersey 08302
609-5793005
NJRA/AI01461900

REV	DATE	COMMENT
	ISSUED FOR CD REVIEW	APRIL 10 2023
	ISSUED FOR BID	DECEMBER 19 2023
	EXTERIOR SHOWERS REMOVED REISSUED FOR	JANUARY 24 2024



1 A-2 SELECTIVE DEMOLITION FLOOR PLAN
SCALE: 1/4=1'-0"



2 A-2 SELECTIVE DEMOLITION EAST ELEVATION
SCALE: 1/4=1'-0"

DRAWING #: A-2 SHEET 2 OF 8

SIGNATURE

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DRAWING TITLE:
SELECTIVE DEMOLITION PLAN

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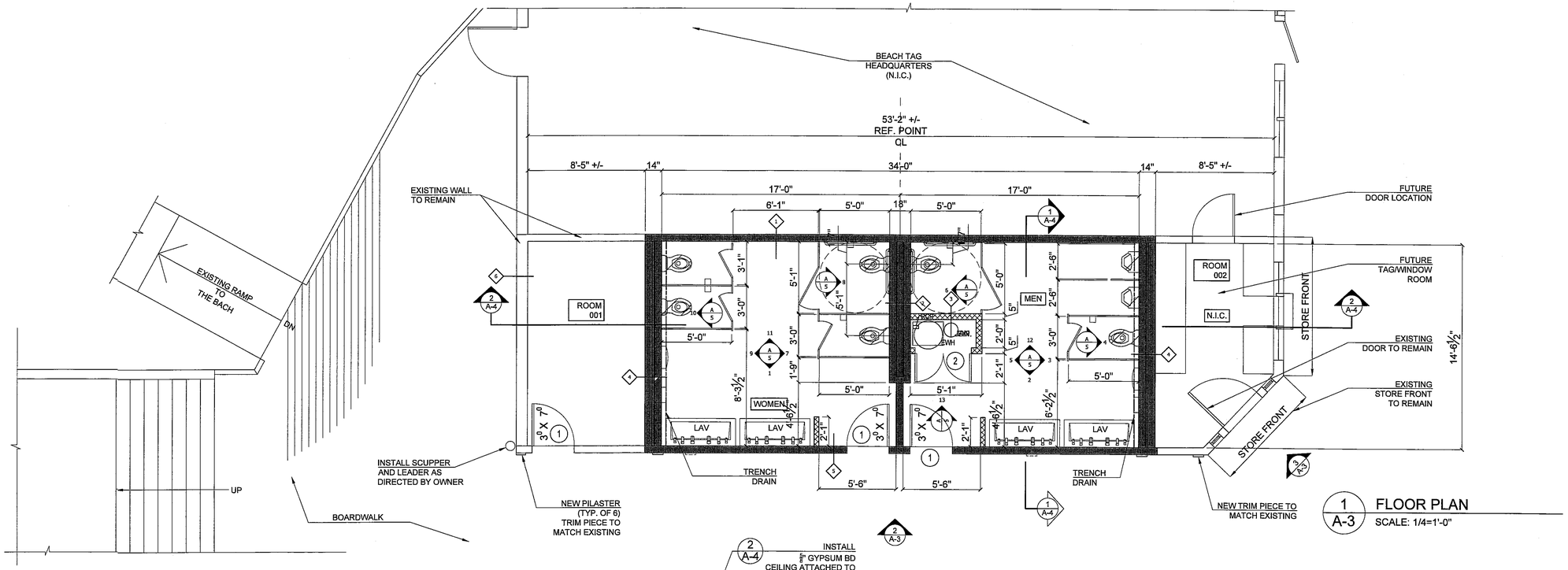
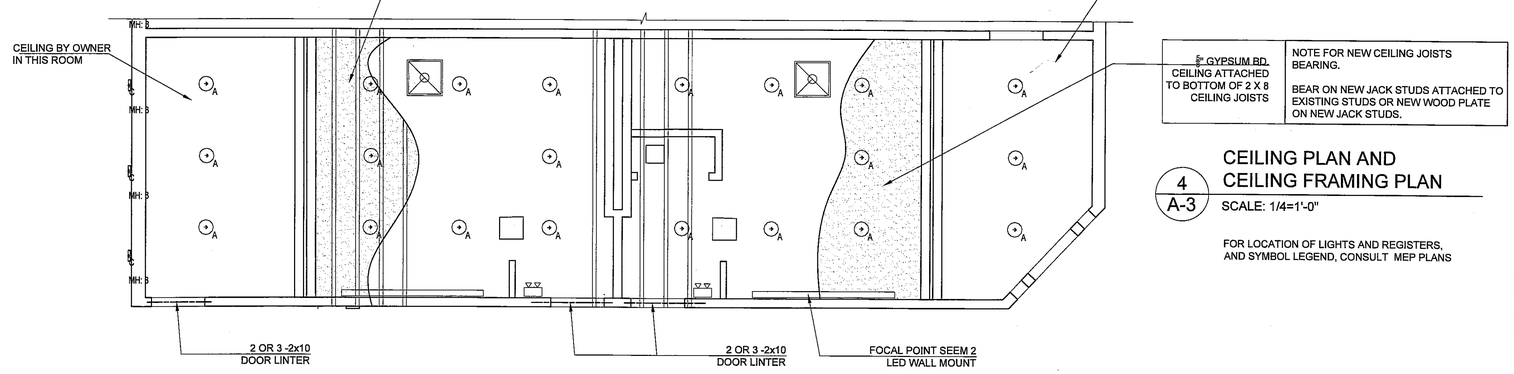


1 A-3 **FLOOR PLAN**
SCALE: 1/4=1'-0"



5/8" GYPSUM BD. CEILING ATTACHED TO BOTTOM OF 2 X 8 CEILING JOISTS	NOTE FOR NEW CEILING JOISTS BEARING. BEAR ON NEW JACK STUDS ATTACHED TO EXISTING STUDS OR NEW WOOD PLATE ON NEW JACK STUDS.

4 A-3 **CEILING PLAN AND CEILING FRAMING PLAN**
SCALE: 1/4=1'-0"

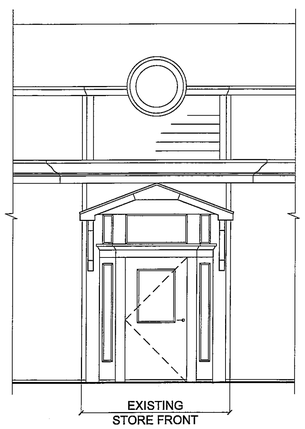
FOR LOCATION OF LIGHTS AND REGISTERS, AND SYMBOL LEGEND, CONSULT MEP PLANS

LEGEND

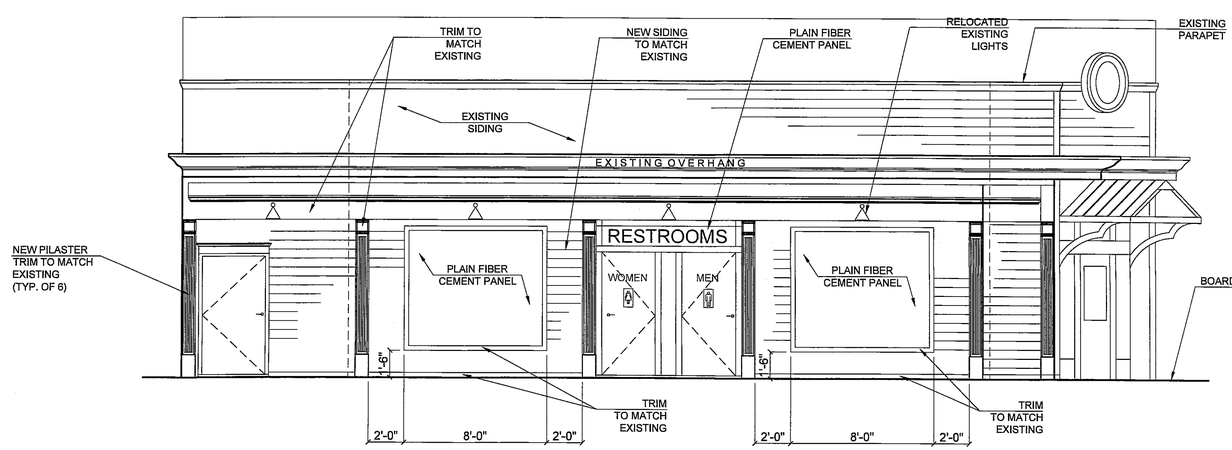
- WALL TYPE — 1 A-4
- ELEV VIEW — ELEVATION VIEWM
- 1 — DOOR TYPE

FOR CEILING FIXTURES CONSULT MEP PLANS

DOOR AND HARDWARE SCHEDULE
DOOR ① FIBERGLASS DOOR AND FRAME 3' X 7' BY CORRIM. • STANDARD EDGE • NO GLAZING • ROOM 01 AND MEN RESTROOM, LEFT HAND. • WOMEN RESTROOM ,RIGHT HAND • POLYURETHANE SEMI-GLOSS FINISH. HARDWARE • DEADBOLT, SCHLAGE B560P626-12-287-10-094 • DOOR CLOSER. LCN 461-RW/PA-LA • HINGES. STANLEY FBB 179-2660 26-D NARP • PUSH. IVES SS 4"X16"-32D 8200-8-4X16-32D • PULL. IVES SS 4"X16"-32D 8302-8-4X16-32D • PEMKO HEAVY DUTY THRESHOLD
DOOR ② DOUBLE HOLLOW METAL BY PIONEER FOR 4'W X 7' H OPENING. • PREPARE INACTIVE DOOR TO ACCEPT ACTIVE DOOR HARDWARE. HARDWARE • HANDLE. SCHLAGE 53-SAT-626 • 3 HINGES ON EACH DOOR • DOOR INACTIVE. 2 FLUSH BOLTS FB458 26D IVES



3 A-3 **NORTH - EAST ELEV.**
SCALE: 1/4=1'-0"



2 A-3 **EAST ELEVATION**
SCALE: 1/4=1'-0"

DRAWING #: A-3
SHEET 3 OF 8

SIGNATURE

DRAWN BY: JB
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JOB : CITY OF CAPE MAY

DRAWING TITLE:
PROPOSED FLOOR PLAN & ELEVATIONS

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WALL TYPE LEGEND BASE BID

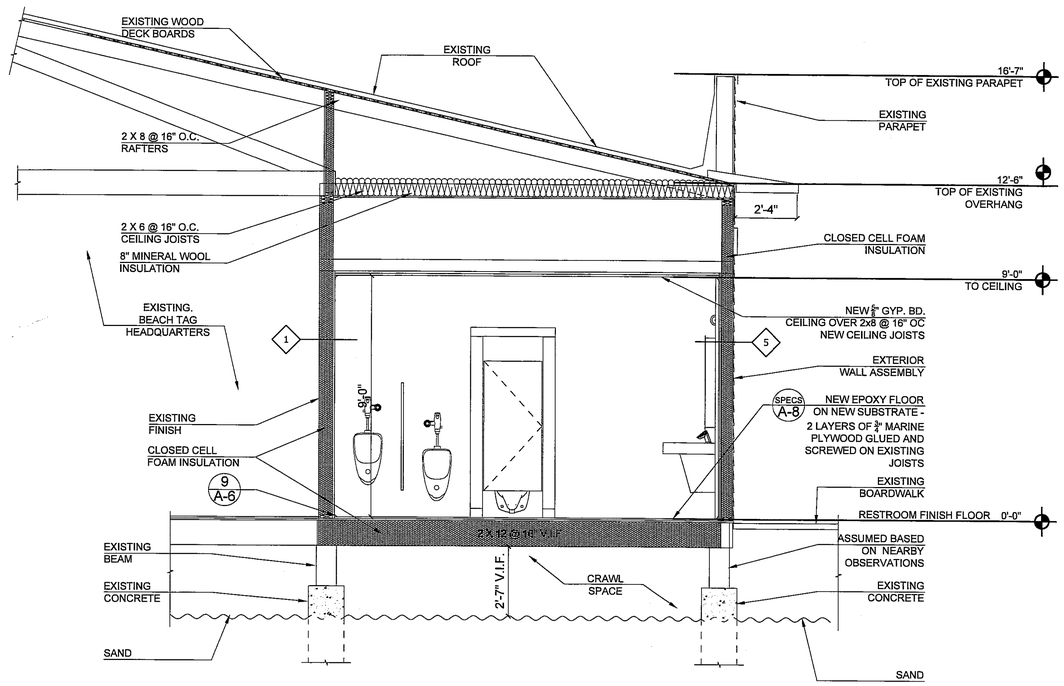
1. EXISTING STUD WALL BETWEEN TAG-OFFICE AND NEW RESTROOMS. ON SIDE OF RESTROOMS - INSTALL CLOSED CELL SPRAY FOAM INSULATION IN WALL CAVITY and ⅝" GYPSUM PANELS MOLD & MOISTURE RESISTANT FINISHED WITH EPOXY WALL HP ON RESTROOM SIDE.
2. NEW DOUBLE WALL - 2 x 6 PRESSURE TREATED WOOD STUDS @ 16" O.C. - EPOXY WALL HP WALL FINISH OVER 5/8" GYPSUM PANELS MOLD AND MOISTURE RESISTANT. CLOSED CELL SPRAY FOAM INSULATION IN WALL CAVITY, SEE TOTAL WIDTH IN FLOOR PLAN.
3. NEW 2 x 4 PRESSURE TREATED WOOD STUDS @ 16" O.C. EPOXY WALL HP FINISH ON RESTROOM SIDE ON ⅝" MOLD AND MOISTURE RESISTANT GYPSUM PANELS. PRIMER AND LATEX PAINT INSIDE CLOSET.
4. NEW DOUBLE WALL - 2 x 6 PRESSURE TREATED WOOD STUDS @ 16" O.C. EPOXY WALL HP FINISH, OVER ⅝" MOLD AND MOISTURE RESISTANT GYPSUM PANELS. CLOSED CELL SPRAY FOAM INSULATION IN WALL CAVITY. ON ROOM 1 SIDE: GLASS ROCK FROM FLOOR TO 4' HIGH AND ⅝" MOLD AND MOISTURE RESISTANT GYPSUM PANELS ABOVE.
5. EXISTING EXTERIOR 2 x 6 STUD WALL - CLOSED CELL SPRAY FOAM WALL INSULATION BETWEEN STUDS AND ⅝" GYPSUM PANEL WITH MOLD & MOISTURE RESISTANCE ON THE INSIDE. EPOXY WALL FINISH ON RESTROOM WALLS. FINISH PER FINISH SCHEDULE. INSTALL ⅝" EXTERIOR GRADE PLYWOOD, WEATHER BARRIER AND SIDING IN KIND WITH EXISTING OR FLAT FIBER CEMENT PANELS FOR FUTURE MURAL INSTALLATION.
6. NEW DOUBLE WALL - 2 x 6 PRESSURE TREATED WOOD STUDS @ 16" O.C. EPOXY WALL HP FINISH, OVER ⅝" MOLD AND MOISTURE RESISTANT GYPSUM PANELS. CLOSED CELL SPRAY FOAM INSULATION IN WALL CAVITY. ON ROOM 2 SIDE: ⅝" MOLD AND MOISTURE RESISTANT GYPSUM PANELS.

3 A-4 WALL TYPES
N.T.S.

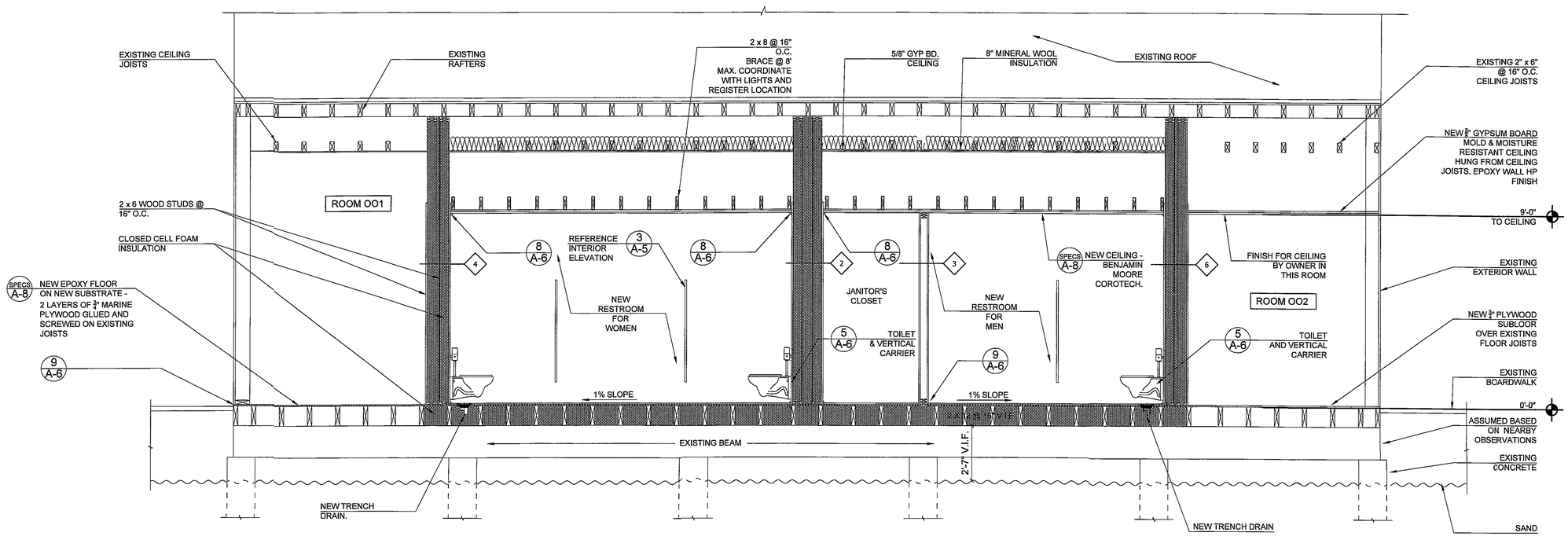
WALL TYPE LEGEND ALTERNATE BID

1. EXISTING STUD WALL BETWEEN TAG-OFFICE AND NEW RESTROOMS. ON SIDE OF RESTROOMS - INSTALL CLOSED CELL SPRAY FOAM INSULATION IN WALL CAVITY and ⅝" GOLD BOND EXP TILE BACKER WITH TILE FINISH.
2. NEW DOUBLE WALL - 2 x 6 PRESSURE TREATED WOOD STUDS @ 16" O.C. - TILE WALL FINISH OVER 5/8" GOLD BOND EXP TILE BACKER. CLOSED CELL SPRAY FOAM INSULATION IN WALL CAVITY, SEE TOTAL WIDTH IN FLOOR PLAN.
3. NEW 2 x 4 PRESSURE TREATED WOOD STUDS @ 16" O.C. WALL TILE FINISH ON RESTROOM SIDE ON ⅝" GOLD BOND EXP TILE BACKER. PRIMER AND LATEX PAINT INSIDE CLOSET.
4. NEW DOUBLE WALL - 2 x 6 PRESSURE TREATED WOOD STUDS @ 16" O.C. TILE WALL FINISH, OVER ⅝" GOLD BOND EXP TILE BACKER. CLOSED CELL SPRAY FOAM INSULATION IN WALL CAVITY. ON ROOM 1 SIDE: GLASS ROCK FROM FLOOR TO 4' HIGH AND 5/8" MOLD AND MOISTURE RESISTANT GYPSUM PANELS ABOVE.
5. EXISTING EXTERIOR 2 x 6 STUD WALL - CLOSED CELL SPRAY FOAM WALL INSULATION BETWEEN STUDS AND TILE WALL FINISH, OVER ⅝" GOLD BOND EXP TILE BACKERON RESTROOM WALLS. FINISH PER FINISH SCHEDULE. INSTALL ⅝" EXTERIOR GRADE PLYWOOD, WEATHER BARRIER AND SIDING IN KIND WITH EXISTING OR FLAT FIBER CEMENT PANELS FOR FUTURE MURAL INSTALLATION.
6. NEW DOUBLE WALL - 2 x 6 PRESSURE TREATED WOOD STUDS @ 16" O.C. TILE WALL FINISH, OVER ⅝" GOLD BOND EXP TILE BACKER. CLOSED CELL SPRAY FOAM INSULATION IN WALL CAVITY. ON ROOM 2 SIDE: 5/8" MOLD AND MOISTURE RESISTANT GYPSUM PANELS.

4 A-4 WALL TYPES FOR ALTERNATE BID
N.T.S.



1 A-4 TRAVERSE SECTION
SCALE: 3/8=1'-0"



2 A-4 LONGITUDINAL SECTION
SCALE: 3/8=1'-0"

DRAWING #: A-4 SHEET 4 OF 8

SIGNATURE

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DRAWING TITLE: SECTIONS

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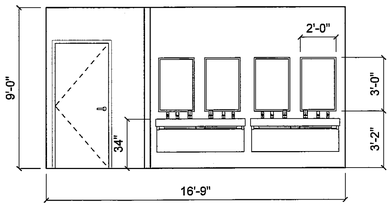
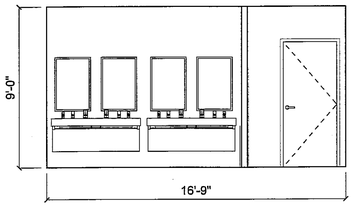
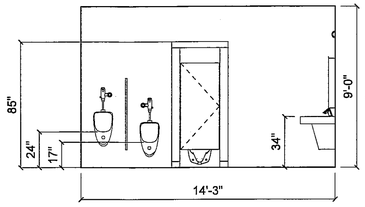


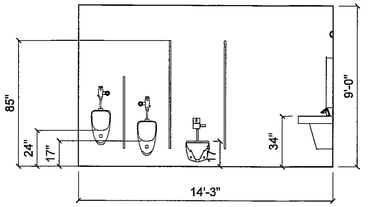
1 INTERIOR ELV. 1
SCALE: 1/4=1'-0"



2 INTERIOR ELV. 2
SCALE: 1/4=1'-0"



3 INTERIOR ELV. 3
SCALE: 1/4=1'-0"



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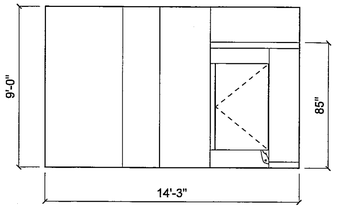

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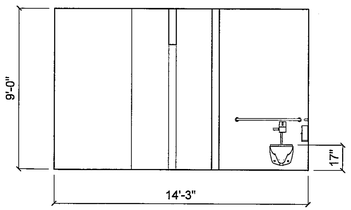

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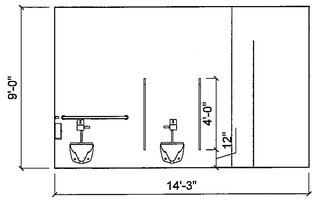

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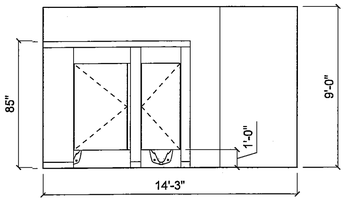
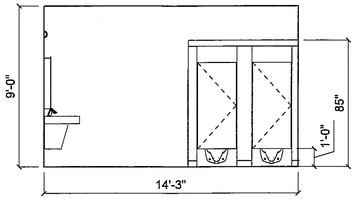
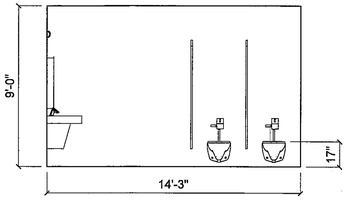


8 INTERIOR ELV. 8
SCALE: 1/4=1'-0"



9 INTERIOR ELV. 9
SCALE: 1/4=1'-0"



10 INTERIOR ELV. 10
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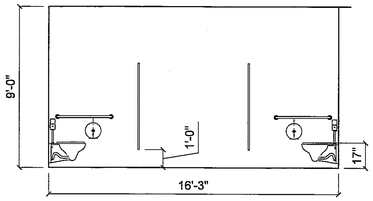
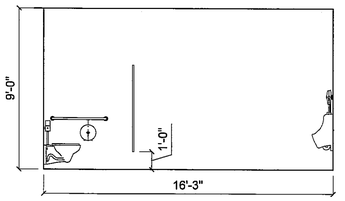
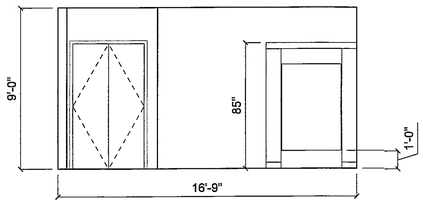


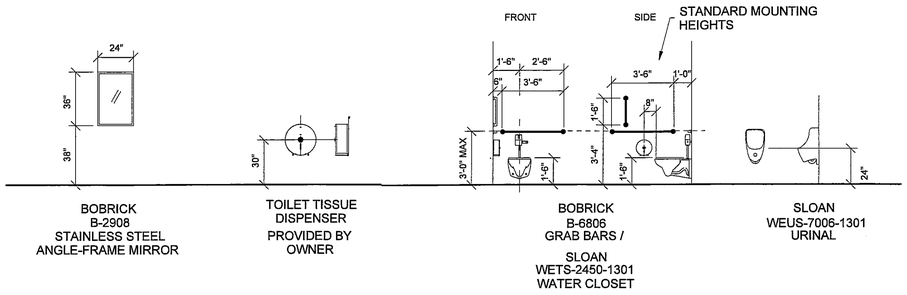
11 INTERIOR ELV. 11
SCALE: 1/4=1'-0"



12 INTERIOR ELV. 12
SCALE: 1/4=1'-0"



13 INTERIOR ELV. 13
SCALE: 1/4=1'-0"



14 / A-5 TOILET ACCESSORIES MOUNTING HEIGHTS
SCALE: 1/4=1'-0"

RESTROOM FINISH SCHEDULE

	MATERIAL	COLOR	SUBSTRATE
FLOOR	EPOXY SYSTEM STANDARD CHIP MACRO BY DUR-A-FLEX SLIP RESISTANT	OYSTER SHELL SATIN FINISH	2 LAYERS ¾" MARINE PLYWOOD
CEILING	BENJAMIN MOORE COROTECH PRE-CATALIZED WATERBORNE EPOXY V 342 EGGSHELL		M.BLOC ⅝" TYPE X W/ MOLD & MOISTURE RESISTANCE BY AMERICAN GYPSUM
WALLS	DUR-A-WALL HP BY DUR-A-FLEX	FROM THE CENTER	M.BLOC ⅝" TYPE X W/ MOLD & MOISTURE RESISTANCE BY AMERICAN GYPSUM
PARTITIONS AŃD SCREENS	BOBCRICK SIERRA SERIES SOLID COLOR REINFORCED COMPOSITE 1092 SERIES-OVERHEAD BRACED	DESERT BEIGE SCO2	
TOILET	SLOAN WETS-2450.1301 WALL HUNG	WHITE	
URINAL	SLOAN WEUS-7006.1301 WALL HUNG	WHITE	
DOOR AND FRAME	FRP BY CORRIM	SMOOTH FACESHEET POLYURETHANE PRIMER- COLOR TO MATCH EXISTING DOORS	
SINK	CORIAN SOLID SURFACE		

FIXTURES AND ACCESSORY SCHEDULE

	MANUFACTURER	MODEL	
SINK	SLOAN	AD-8200	DECK SINK LAVORATORY SYSTEM,
FAUCET	SLOAN	E FX SERIES	
SOAP DISPENSER	SLOAN	ESD 500	
HAND DRYER	SLOAN	BASYS STYLE	
URINAL	SLOAN	WEUS-7006.1301	
WATER CLOSET	SLOAN	WETS-2450.1301	
ADA MIRROR	BOBRICK	B-293 2436	
MIRROR	BOBRICK	B-290 2436	
PARTITIONS	BOBRICK	1092 SERIES	OVERHEAD BRACED
URINAL SCREENS	BOBRICK	1095 SERIES	WALL HUNG
GRAB BARS	BOBRICK	B-6806 SERIES	SATIN FINISH SLIP-RESISTANT SURFACE
VERTICAL FIXED CARRIERS	ZURN	ZN1209-ND4 ZN1209-N4	DOUBLE IN STUD WALL SINGLE IN STUD WALL
FLOOR DRAIN GRATE	MIFAB	T100-PGC-HPP	TO SUIT 4" CLEAR OPENING CHANNELS
MOP SERVICE SINK	FIAT	TSB 500	12" DEEP TERRAZZO MOP SERVICE SINK
SERVICE SINK FAUCET	FIAT	830-AA	

DRAWING #: A-5 SHEET 5 OF 8

SIGNATURE

DRAWN BY: JB
SCALE: AS NOTED
DATE: APRIL 10- 2023
JOB : CITY OF CAPE MAY

DRAWING TITLE:
INTERIOR ELEVS.
TOILET ACCESSOR.
MOUNTING HEIGHTS

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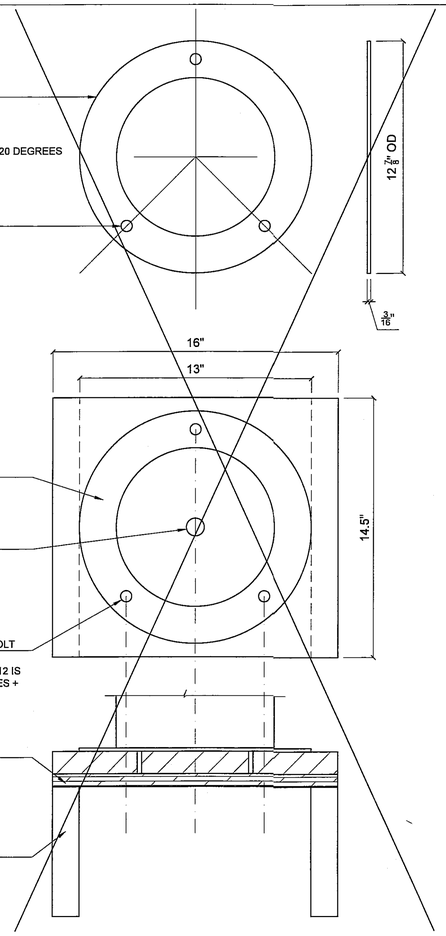
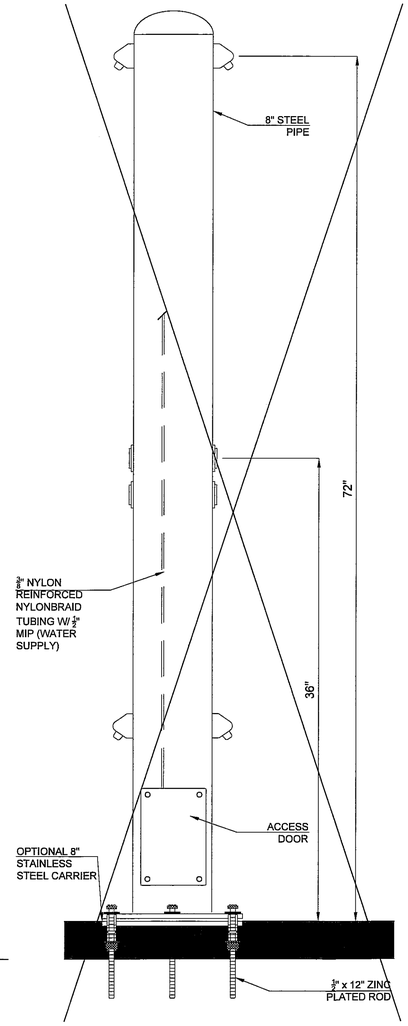
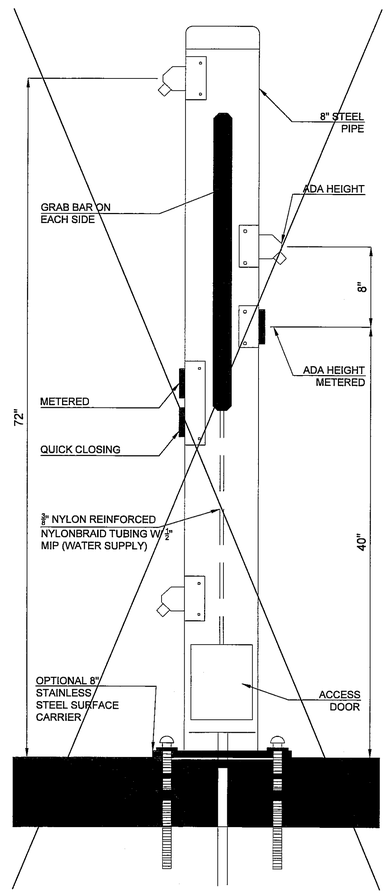


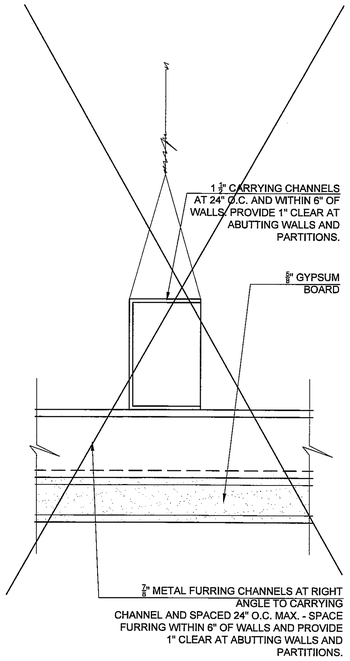
1 SHOWER TOWER ATTACHMENT DETAIL
SCALE: N.T.S.



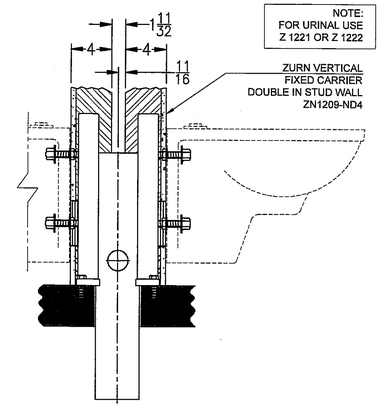
2 MODEL 564 SM
SCALE: N.T.S.



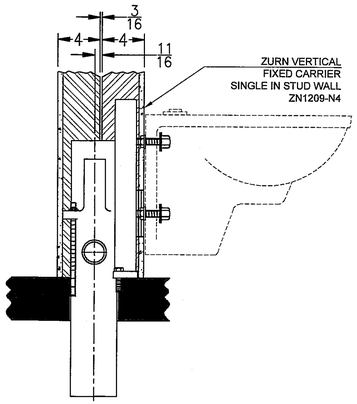
3 MODEL 575 SM- DUAL FOOT & SHOWER TOWER
SCALE: N.T.S.



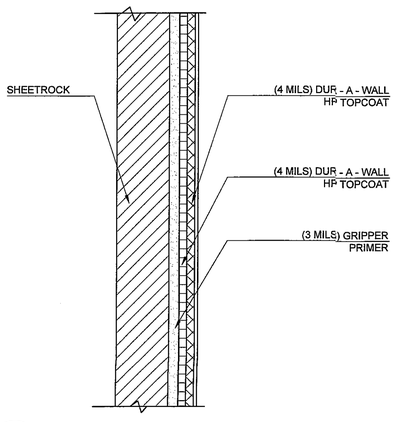
4 CEILING DETAIL
SCALE: N.T.S.



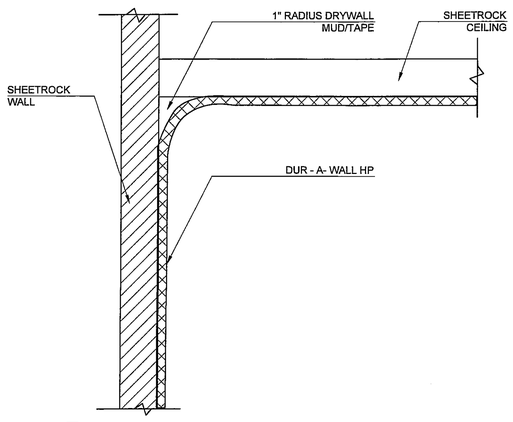
5 CARRIER DETAIL @ DOUBLE IN STUD WALL
SCALE: N.T.S.



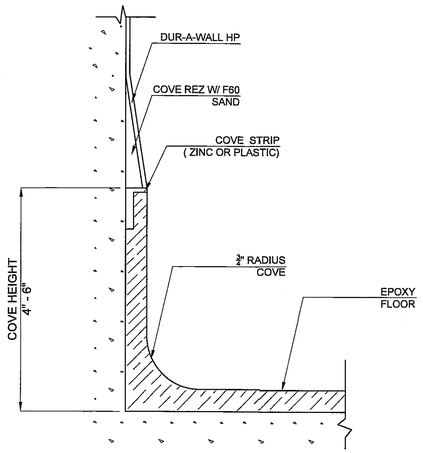
6 CARRIER DETAIL @ SINGLE IN STUD WALL
SCALE: N.T.S.



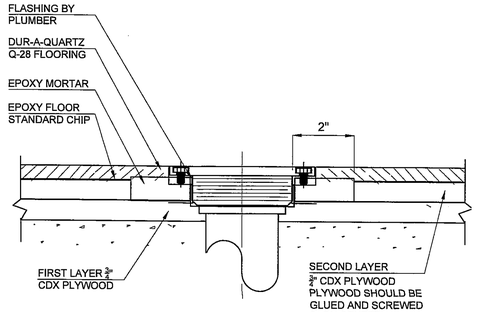
7 DUR-A-WALL HP OVER SHEETROCK
SCALE: N.T.S.



8 DUR-A-WALL HP WALL CEILING TRANSITION
SCALE: N.T.S.



9 COVE BASE W/ CAP TRANSITION TO DUR-A-WALL HP
SCALE: N.T.S.



10 DRAIN DETAIL OVER PLYWOOD
SCALE: N.T.S.

DRAWING #: A-6 SHEET 6 OF 8

SIGNATURE

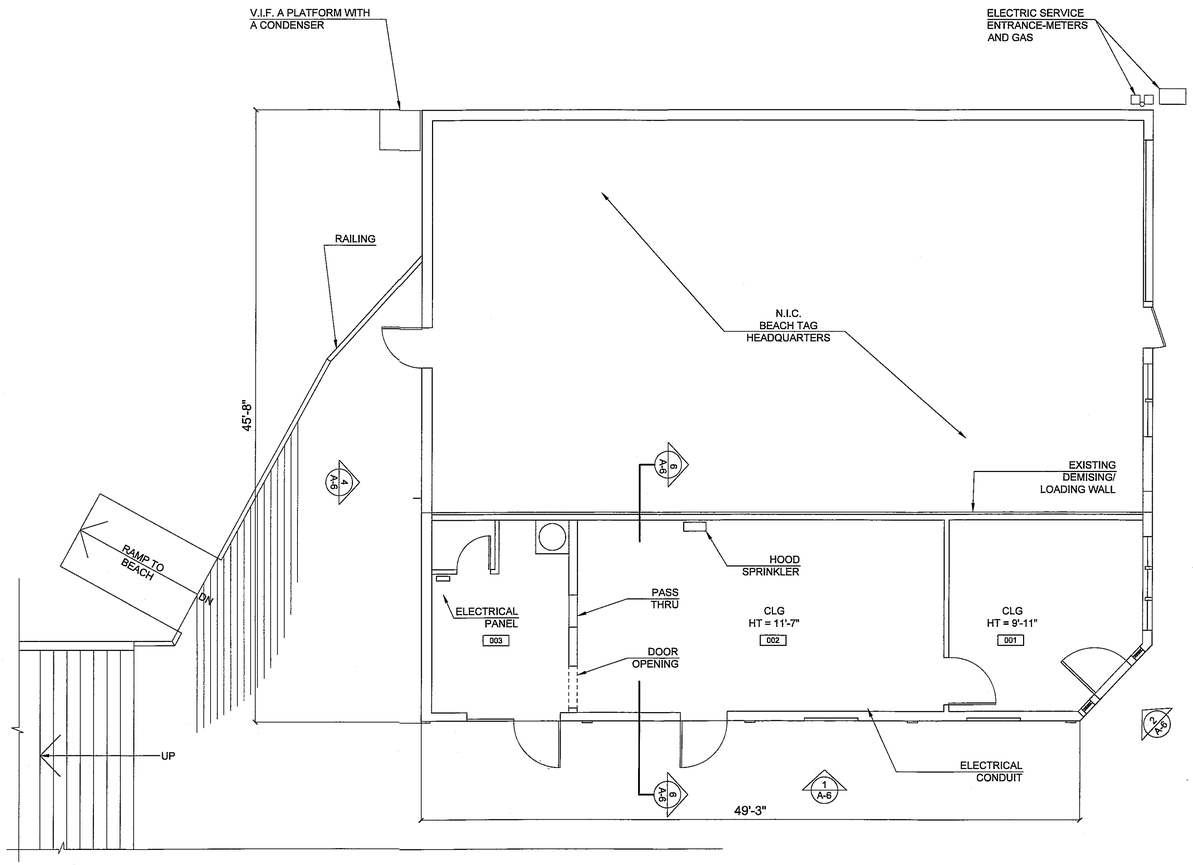
DRAWN BY: JB
SCALE: AS NOTED
DATE: APRIL 10- 2023
JOB : CITY OF CAPE MAY

DRAWING TITLE: DETAILS

NEW PUBLIC RESTROOMS
THE CITY OF CAPE MAY
702 BEACH AVE
CAPE MAY, NJ.

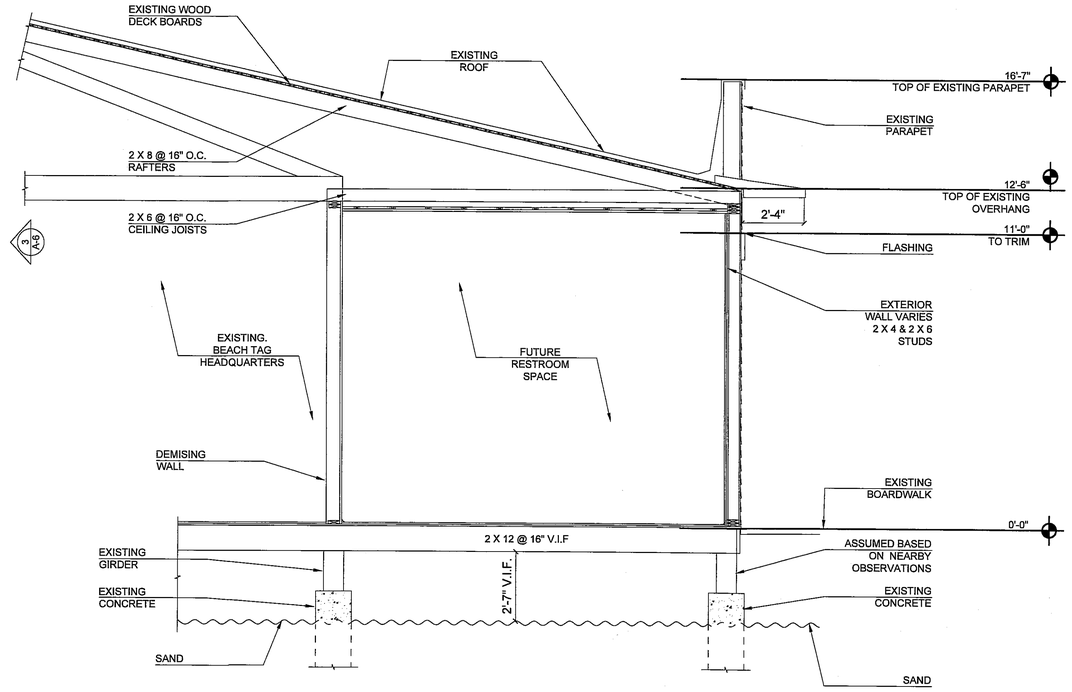
maria cerda-moreno architect
14 West Commerce St.
Bridgeton, New Jersey 08302
609-5793005
NJRA/AI01461900

REV	DATE	COMMENT
		EXTERIOR SHOWERS REMOVED REISSUED FOR JANUARY 24 2024
	DECEMBER 19 2023	ISSUED FOR BID
	APRIL 10 2023	ISSUED FOR CD REVIEW



5 A-6 EXISTING FLOOR PLAN
SCALE: 3/16=1'-0"

NORTH



6 A-6 EXISTING SECTION SKETCH
SCALE: 3/8=1'-0"

1 A-6 EAST ELEVATION
SCALE: 3/16=1'-0"

2 A-6 NORTH-EAST ELEVATION
SCALE: 3/16=1'-0"

3 A-6 NORTH ELEVATION
SCALE: 3/16=1'-0"

4 A-6 SOUTH ELEVATION
SCALE: 3/16=1'-0"

DRAWING #: A-7 SHEET 7 OF 8

SIGNATURE

DRAWN BY: JB
SCALE: AS NOTED
DATE: APRIL 10- 2023
JOB : CITY OF CAPE MAY

DRAWING TITLE: EXISTING CONDITIONS

NEW PUBLIC RESTROOMS
THE CITY OF CAPE MAY
702 BEACH AVE
CAPE MAY, NJ.

maria cerda-moreno architect
14 West Commerce St.
Bridgeton, New Jersey 08302
609-5793005
NJRA/AI01461900

REV	DATE	COMMENT
	ISSUED FOR CD REVIEW	APRIL 10 2023
	ISSUED FOR BID	DECEMBER 19 2023
	EXTERIOR SHOWERS REMOVED REISSUED FOR JANUARY 24 2024	

DEMOLITION NOTES
DESCRIPTION
A. Work Included:
1. Careful disassembly of items to be salvaged including:
a. Exterior light fixtures
b. Exterior trim
DEFINITIONS
A. The following specific terms and their definitions are used in this project:
1. Disassemble: Carefully disassemble materials which are to be salvaged, stored, repaired, and reinstall or return to
Owner;
2. Remove: Remove materials which are not to be reinstalled, or returned to the Owner and dispose of them in a proper
and legal manner.
QUALITY ASSURANCE
A. Comply with requirements of governmental agencies having jurisdiction over this Work, including disposal operations.
B. Exercise all safety precautions and actions necessary to prevent fire or collapse resulting from this Work.
EXECUTION
GENERAL
A. Exploratory work precedes all other work.
B. Perform disassembly, demolitions, and removals of all types in a controlled manner without:
1. Damage to the materials or construction to remain;
2. Failing to leave surfaces ready to receive new or reassembled work;
3. Damage to the site.
C. Remove demolished materials completely from the Site;
1. Dispose of such materials in a legal manner.
DEMOLITION AND REMOVALS
A. With careful study of the Contract Documents and the Site:
1. Clearly identify items to be demolished;
2. Mark interfaces to enable workmen to identify materials to be demolished and the limits of demolition;
3. Confirm the materials and limits of demolition.
B. Perform demolition:
1. Without injury or alteration to the material or component remaining in place;
2. Leaving surfaces ready to receive new work.

FASTENERS AND FASTENING
GENERAL
1.1 DESCRIPTION
1. Fasteners for rough and finish carpentry.
PRODUCTS
FASTENERS
A. Siding nails:
1. Depth to penetrate stud 1/2";
2. Stainless steel.

B. Trim nails:
1. Ring-shank finish nail;
2. Stainless steel.

C. Framing nails:
1. Common wire;
2. Steel;
3. Hot dip galvanized.

D. Wood screws:
Countersunk flat-head;
1. Steel;
2. Hot dip galvanized.

E. Self drilling screws:
1. Countersunk flat-head reamer;
2. Steel;
3. Hot dip galvanized or weather-coated.

F. Bolts:
1. Bolts and nuts: hexagonal head cap screws and nuts, stainless steel, ASTM F593, AISI type 304, 18-8;
2. Flat washers: stainless steel, ASTM F593, AISI type 304, 18-8;
3. Lock washers: stainless steel, ASTM F593, AISI type 304, 18-8, helical spring;
4. Lag bolts: stainless steel, ASTM F593, AISI type 304, 18-8.

G. Pre-engineered metal connectors used to support wood members from masonry or from wood members:
1. Beam seats, joist hangers, joist bridging and strap ties as manufactured by Simpson Strong-Tie Company, Inc.

OTHER MATERIALS
1. Provide other materials, not specifically described, but required for a complete and proper installation.

EXECUTION
FASTENING
A. Nailing:
1. Penetrate the receiving piece at least 1/2 the nail/spike length;
2. Pre-drill for all fasteners;
3. Do not split wood or timber member with nail or spike;
4. Remove split members and replace;
5. Set nail head in finish carpentry items.
B. Bolting and screwing:
1. Drill bolt holes 1/16": larger than bolt diameter;
2. Pre-drill for screws;
3. Drill holes:
a. Straight and from one side;
b. Perpendicular to surface;
c. Use jig where necessary;
4. Install washers under all nuts and bolt heads.

ROUGH CARPENTRY
GENERAL
DESCRIPTION
A. Work included:
1. Blocking and framing;
2. Plywood;
3. Interior partition framing
PRODUCTS
SOFTWOOD DIMENSIONAL LUMBER
A. Work dimension lumber stock to conform with drawings or match original material in:
1. Dimension;
2. Shape;
3. Profile.
B. Identify each piece of dimension lumber stock by stamp, brand, mark or tag showing, at a minimum:
1. Recognized grading bureau: SPIB, WCLIB, etc.;
2. Mill;
3. Grade and species;
4. Moisture content.
C. *Softwood lumber: Dimension lumber:*
1. Species:
Southern Pine;
SPIB #2 or Better;
2. Grade:
S4S;
3. Surface finish:
S-Dry, 19% maximum;
4. Moisture content:
5. Length: Full length.

HARDWOOD LUMBER
A. Provide hardwood lumber for framing where noted:
Douglas Fir;
1. Species:
WWPA Structural Grade;
2. Grade:
Sawn;
3. Surface finish:
S-Dry, 19% maximum;
4. Moisture content:
Per Drawings;
5. Size:
Full lengths and without splices, free from warp, cup, bow, checks or other 6. Quality: dimensional defect or variation which will affect fit-up and alignment.

PLYWOOD
A. Identify each piece of plywood by stamp, brand, mark or tag showing at a minimum:
1. Registered Trademark: APA;
2. Mill;
3. Panel Grade;
4. Span Rating and Thickness;
5. Exposure Classification;
6. Veneer Grade.

B. Plywood for wall sheathing:
APA RATED;
1. Product:
2. Span rating:16";
3. Nominal Thickness: 5/8" and 3/4"
4. Exposure: Exterior, marine.
5. Veneer Grade:
C. Plywood for floor:
APA RATED STURDI-I-FLOOR;
1. Product:
2. Span rating:16";
3. Actual Thickness: 3/4"

4. Exposure:
Exterior;
C - C Plugged
5. Veneer Grade:
6. Panel Edge: Tongue and Groove.
EXECUTION
3.1 ENVIRONMENTAL CONDITIONS
A. Verify moisture content of wood is less than 19% at the time of installation:
1. Do not install wood with moisture content exceeding 19%.
3.2 GENERAL
A. Comply with Section 01100.
B. Fit and scribe pieces to match existing and original installation for:
1. Height and width;
2. Thickness;
3. Shapes;
4. Finish.
C. Select and position pieces so knots, defects and repairs do not interfere with locations of fasteners, joints or connections:
1. Set loose knots with epoxy;
2. Cut out and discard sections with knot holes or defects such as waney edges.
3.3 FIELD TREATMENT OF WOOD FOR DURABILITY
A. Saturate the surface of all field cuts in preservative treated members after trial fit-up but before assembly or fastening.
3.4 JOINTS
A. Framing lumber: Make joints true, tight, and well nailed.

FINISH CARPENTRY
GENERAL
DESCRIPTION
A. Work included:
1. Exterior trim;
2. Siding;
3. Incidental work.
PRODUCTS
FINISHED WOOD
A. Provide new wood for new construction and repair of existing including, but not limited to, siding, interior and exterior
trim.
B. Identify each piece of dimension lumber stock by stamp, brand, mark or tag showing, at a minimum:
1. Recognized grading bureau:
If applicable;
2. Mill;
3. Grade and species;
4. Moisture content.
C. Work board stock to conform with drawings or match existing material in:
1. Dimension;
2. Shape;
3. Profile;
4. Surface finish (before weathering).
D. Siding
Match existing
E. Exterior trim:
Match existing

SOUND BARRIER

-440 SoundBarrier® Architectural Specifications Homasote Company; wall sound barrier.

Manufacturer: Homasote Company; 932 Lower Ferry Road, West Trenton, NJ 08628. Tel: (800) 257-9491. Tel: (609) 883-3300. Fax: (609) 883-3497. Email: sales@homasote.com
Website: www.homasote.com

Thickness: 1/2 inch (13 mm) Wall Panel Fasteners: Screws:Wood Framing: Coarse thread drywall steel type wood screw, length as required to penetrate framing 3/4 inch (19 mm) minimum. Stainless steel or Hot dip galvanized Drywall fastener for decoupled wall installation.
#10 drywall screw or laminating screw. Install in accordance with manufacturer's instructions.

Wall Panel Installation: Space panel joints 1/8 inch (3 mm) apart; 1/4 inch (6 mm) space at floors, ceilings, and window and door frames. Install gypsum wallboard or other wall finish panels so that finish panel joints are staggered and do not coincide with sound barrier panel joints. Install in accordance with finish panel manufacturer's installation recommendations.

PAINT
CEILING AT RESTROOMS
1st Coat: Benjamin Moore Corotech Acrylic Metal Primer V 110 (199g/L)
2nd Coat: Benjamin Moore Corotech Pre-Catalyzed Waterborne Epoxy Eggshell V342 (73g/L, mpi#151
3rd Coat: Benjamin Moore Corotech Pre-Catalyzed Waterborne Epoxy Eggshell V342 (73g/L, mpi#151
MANUFACTURERS
Acceptable Manufacturer: Benjamin Moore and Co., which is located at: 101 Paragon Dr Montvale, NJ 07645; Toll Free Tel: 866-708-9181; Email: info@benjaminmoore.com; Web:www.benjaminmoore.com
EXECUTION
EXAMINATION
The Contractor shall review the product manufacturer's special instructions for surface preparation, application, temperature, re-coat times, and product limitations.
The Contractor shall review product health and safety precautions listed by the manufacturer.
The Contractor shall be responsible for enforcing on site health and safety requirements associated with the Work.
Examine surfaces to receive coatings for surface imperfections and contaminants that could impair performance or appearance of coatings, including but not limited to, loose primer, and follow manufacturer's specifications for suface preparation, application and cleaning.

FIBERGLASS REINFORCED PLASTIC (FRP) DOORS AND FRAMES

CORRIM Company, Oshkosh, Wisconsin 54901. Phone: 920-231-2000 Fax: 920-231-2238 www.corrim.com or equal.

- Total door thickness to be a nominal 1-3/4 inches t hick.
- Lock stiles on non-rated and rated active leaves shall be factory beveled 1/8" in 2".
- Provide doors with completely seamless construction on all six (6) surfaces.
- Face Sheets: FRP face sheets shall be manufactured using a corrosion resistant resin system with light stabilizing additives. The resin shall be reinforced with fiberglass, 50% average by weight for enhanced strength. Face sheets shall be a minimum of 0.125 inch thick fiberglass. Face sheets will be smooth

FRP FRAMES
- Fabrication: FRP frames shall be rigid, neat in appearance, free from defects and the finish shall match the doors.
- Fabricate FRP doors and frames as shown on the drawings and in accordance with best shop practices.
- Field measurements shall be taken as required for coordinating with adjoining work.

FINISH
- Polyurethane finish, high solids polyurethane topcoat.
- Provide and install all necessary flashing for waterproofing.

GYPSUM BOARD
M-Bloc Type X Mold Resistant Gypsum Board

Manufacturer:
American Gypsum
5960 Berkshire Lane, Suite 800
Dallas, Texas 75219
(800) 545-6302
(214) 530-5834 fax
www.americangypsum.com

Interior gypsum board.

Moisture and Mold-Resistant - Type X: With moisture and mold-resistant core and surfaces. Complying with ASTM C 1396/C1396M as applicable to type of gypsum board indicated.
Core: 5/8 inch (15.9 mm).
Long Edges: Tapered.
Performance: Rating of 10 per ASTM D3273.
Acceptable Product: M-Bloc Type X with Mold and Moisture Resistance

Joint Tape:
Interior Gypsum Wallboard: Paper.

Joint Compound for Interior Gypsum Wallboard: For each coat use formulation that is compatible with other compounds applied on previous or for successive coats.
Prefilling: At open joints, rounded or beveled panel edges, and damaged surface areas, use setting-type taping compound.
Embedding and First Coat: For embedding tape and first coat on joints, fasteners, and trim flanges, use drying-type or setting-type taping compound.
a. Use drying-type or setting-type compound for installing paper-faced metal trim accessories.
Fill Coat: For second coat, use drying-type or setting-type, sandable topping compound.
Finish Coat: For third coat, use drying-type or setting-type, sandable topping compound.
Skim Coat: For final coat of Level 5 finish, use drying-type or setting-type, sandable topping compound.

APPLYING AND FINISHING PANELS, GENERAL
Comply with ASTM C 840, GA-216 or GA-214.
Install ceiling panels across framing to minimize the number of abutting end joints and to avoid abutting end joints in central area of each ceiling. Stagger abutting end joints of adjacent panels not less than one framing member.
Install panels with face side out. Butt panels together for a light contact at edges and ends with not more than 1/16 inch (1.5 mm) of open space between panels. Do not force into place.
Locate edge and end joints over supports, except in ceiling applications where intermediate supports or gypsum board back-blocking is provided behind end joints. Do not place tapered edges against cut edges or ends. Stagger vertical joints on opposite sides of partitions. Do not make joints other than control joints at corners of framed openings.
Form control and expansion joints with space between edges of adjoining gypsum panels.
Cover both faces of support framing with gypsum panels in concealed spaces (above ceilings, etc.), except in chases braced internally.
Unless concealed application is indicated or required for sound, fire, air, or smoke ratings, coverage may be accomplished with scraps of not less than 8 sq. ft. (0.7 sq. m) in area.
Fit gypsum panels around ducts, pipes, and conduits.
Where partitions intersect structural members projecting below underside of floor/roof slabs and decks, cut gypsum panels to fit profile formed by structural members; allow 1/4 to 3/8 inch (6 to 9 mm) wide joints to install sealant.
Isolate perimeter of gypsum board applied to non-load-bearing partitions at structural abutments, except floors. Provide 1/4 to ½ inch (6 to 12 mm) wide spaces at these locations, and trim edges with edge trim where edges of panels are exposed. Seal joints between edges and abutting structural surfaces with acoustical sealant.

Wood Framing: Install gypsum panels over wood framing, with floating internal corner construction. Do not attach gypsum panels across the flat grain of wide-dimension lumber, including floor joists and headers. Float gypsum panels over these members, or provide control joints to counteract wood shrinkage.

APPLYING INTERIOR GYPSUM BOARD
Install interior gypsum board in the following locations:
All surfaces indicated on plans.
Ceiling Type: Ceiling surfaces.

Single-Layer Application:
On ceilings, apply gypsum panels before wall/partition board application to greatest extent possible and at right angles to framing, unless otherwise indicated.
On partitions/walls, apply gypsum panels vertically (parallel to framing), unless otherwise indicated or required by fire-resistance-rated assembly, and minimize end joints.
Stagger abutting end joints not less than one framing member in alternate courses of panels.
At stairwells and other high walls, install panels horizontally, unless otherwise indicated or required by fire-resistance-rated assembly.
On furring members, apply gypsum panels vertically (parallel to framing) or horizontally (perpendicular to framing) with vertical joints offset at least one furring member. Locate edge joints of base layer over furring members.
Fastening Methods: Apply gypsum panels to supports with steel drill screws.

FINISHING GYPSUM BOARD
General: Treat gypsum board joints, interior angles, edge trim, contrd joints, penetrations, fastener heads, surface defects, and elsewhere as required to prepare gypsum board surfaces for decoration. Promptly remove residual joint compound from adjacent surfaces.
Prefill open joints, rounded or beveled edges, and damaged surface areas.
Apply joint tape over gypsum board joints, except those with trim having flanges not intended for tape.
Gypsum Board Finish Levels: Finish panels to levels indicated below and according to ASTM C 840, GA-216 or GA-214:

All locations to receive Level 5 finish (all joints and interior angles shall have tape embedded in joint compound and two separate coats of joint compound applied over all flat joints. A thin skim coat of joint compound trowel applied, or a material manufactured especially for this purpose and applied in accordance with manufacturer's recommendations, shall be applied to the entire surface. The surface shall be smooth and free of tool marks and ridges): Gloss or semi-gloss paints, and areas where severe lighting conditions occur.

EPOXY FLOOR
CONDITIONS OF WOOD SUBSTRATE

Substrate should be structurally sound, dry and free of any coatings, paints and glue. Outside of these parameters manufacturer should be consulted.
Plywood should be new and free of contaminants such as oil and moisture. Marine wood is preferred due to its resisstance to flexing and warping from moisture.
Contamination ransfer should be isolated using a propietary polythlene vapor barrier, all joints should be taped according to manufacturers instructions. Raised platforms should have consideration for air bricks in outside walls to reduce the risk of rising damp.
It is recommended that (2) layers of plywood be installed offset at joints to reduce flexing between joists. Plywood should be at least 3/4" thick per layer.
Plywood should be positively fastened with high quality construction adhesive and recessed screws at a 6" centered screw pattern.
Seams should be filled with Elast-O-Coat Membrane and fiberglass tape. Then 1 one coat of Elast- Coat- Membrane over the entire floor area@ 25 mils?65 sq. ft. per gallon before installing resinous flor system.

DUR-A-FLEX, Inc.
RESINOUS FLOORING
DUR-A-CHIP EPOXY BROADCAST (Macro) WITH URETHANE TOPCOAT
1. Resinous flooring system as shown on the drawings and in schedules.
SYSTEM DESCRIPTION
A. The work shall consist of preparation of the substrate, the furnishing and application of an epoxy based multi
roller applied flooring system with Macro colored decorative chips and urethane topcoat. The system shall have
the color and texture as specified by the Owner with a nominal thickness of 60 mils. It shall be applied to the
prepared area(s) as defined in the plans strictly in accordance with the Manufacturer's recommendations.
B. Cove base (if required) to be applied where noted on plans and per manufacturers standard details unless
otherwise noted.
C. Samples: A 3 x 3 inch square sample of the proposed system. Color, texture, and thickness shall be representative
of overall appearance of finished system subject to normal tolerances.
QUALITY ASSURANCE
A. The Manufacturer shall have a minimum of 10 years experience in the production, sales, and technical support of epoxy and urethane industrial flooring and related materials.
B. The Applicator shall have experience in installation of the flooring system as confirmed by the manufacturer in all phases of surface preparation and application of the product specified.
C. No requests for substitutions shall be considered that would change the generic type of the specified System.
D. System shall be in compliance with requirements of United States Department of Agriculture (USDA),Food, Drug Administration (FDA), and local Health Department.
A pre-installation conference shall be held between Applicator, General Contractor and the Owner to review and clarification of this specification, application procedure, quality control, inspection and acceptance criteria and production schedule.
The system shall be applied in six distinct steps as listed below:
a. Substrate preparation
b. Priming
c. First broadcast coat application with first chip broadcast
d. Second broadcast coat with sec
e. ond chip broadcast
f. Grout coat application,
g. Topcoat application
Immediately prior to the application of any component of the system, the surface shall be dry and any remaining dust or loose particles shall be removed using a vacuum or clean, dry, oil-free compressed air.
The handling, mixing and addition of components shall be performed in a safe manner to achieve the desired results in accordance with the Manufacturer's recommendations.
The system shall follow the contour of the substrate unless pitching or other leveling work has been specified by the Architect.
A neat finish with well-defined boundaries and straight edges shall be provided by the Applicator.
.
B. Primer
The primer shall be Dur-A-Glaze #4 WB Primer that is mixed at the ratio of 1 part resin to 4 parts hardener per the manufacturer's instructions.
The primer shall be applied by 1/8 inch notched squeegee and back rolled at the rate of 200 sf/gal to yield a dry film thickness of 4 mils.
C. Broadcast Coats
2. The broadcast coat shall be applied as a double broadcast system as specified by the Architect.
3. The broadcast coat shall be comprised of two components, a resin, and hardener and mixed in the ratio of 2 parts resin to 1 part hardener.
4. The resin shall be added to the hardener and thoroughly mixed by suitably approved mechanical means.
5. The first broadcast coat shall be applied over horizontal surfaces using the dip and roll, and back roll method at the rate of 300 sf/gal using the Dur-A-Gard OPF material.
6. Chips shall be broadcast to excess into the wet material, Macro chips at the rate of 0.1 lbs/sf.
7. Allow material to fully cure. Vacuum, sweep and/or blow to remove all loose aggregate.
Scrape the floor with a trowel or floor scraper. Sweep and vacuum the floor again.
8. Apply a second broadcast coat of resin shall be applied by flat squeegee then back rolled with a coverage rate of 150 sf/gal with the Dur-A-Glaze #4 Water Clear epoxy.
9. Chips shall be broadcast to excess, Macro chips at the rate of 0.1 lbs/sf.
10. Allow material to fully cure. Vacuum, sweep and/or blow to remove all loose chips.
11. Scrape the floor with a trowel or floor scraper. Sweep and vacuum the floor again.
D. Grout Coat
The grout coat shall be comprised of a Dur-A-Glaze # 4 Water Clear epoxy that is mixed in the ratio of 1 part hardener to 2 parts resin and installed per the manufacturer's recommendations.
The grout coat shall be squeegee applied and back rolled with a coverage rate of 100 sf/gal.
E. Topcoat
The topcoat of Armor Top shall be roller applied at the rate of 500 sf/gal to yield a dry film thickness of 3mils.
The finish floor will have a nominal thickness of 60 mils.
FIELD QUALITY CONTROL
D. Tests, Inspection
The following tests shall be conducted by the Applicator:
a. Temperature
b. Air, substrate temperatures and, if applicable, dew point.
c. Coverage Rates
Rates for all layers shall be monitored by checking quantity of material used against the area
covered.
3.5 CLEANING AND PROTECTION
A. Cure flooring material in compliance with manufacturer's directions, taking care to prevent their contamination
during stages of application and prior to completion of the curing process.
B. Remove masking. Perform detail cleaning at floor termination, to leave cleanable surface for subsequent work
of other sections.

WALL TILE (ALTERNATE BID)
Title: Specification for 4" x 4" Porcelain Tile Wall, Full Height, by DALTILE

Scope:
This specification outlines the requirements for the supply and installation of 4" x 4" porcelain tiles for a full-height wall application. The specification includes material selection, installation procedures, and quality control measures to ensure a durable and aesthetically pleasing tile wall.

Materials:

2.1. Porcelain Tiles:

Tiles shall be 4" x 4" (100 mm x 100 mm) in size
Tiles shall be manufactured from high-quality porcelain with a minimum water absorption rate of 0.5%.
Tiles shall have a glazed finish, resistant to staining, and suitable for the intended application.
Tiles shall meet or exceed the ANSI A137.1 standards for ceramic tile performance.
2.2. Tile Adhesive:

Adhesive shall be a polymer-modified thin-set mortar suitable for use with porcelain tiles.
Adhesive shall meet or exceed ANSI A118.4 and ANSI A118.11 standards.
2.3. Grout:

Grout shall be a high-performance, polymer-modified, unsanded cementitious grout.
Grout shall meet or exceed ANSI A118.7 standards.
Grout color shall be selected to complement the tile color and design.
2.4. Sealant:

A silicone-based sealant shall be used for all movement joints and areas exposed to water.
Sealant shall be mold and mildew resistant and meet or exceed ASTM C920 standards.
Installation:
3.1. Surface Preparation:

The substrate shall be clean, dry, and free of any dust, grease, or other contaminants.
The substrate shall be level, plumb, and true to a tolerance of 1/8" in 10 feet (3 mm in 3 meters).
3.2. Tile Layout:

Tiles shall be laid out in a grid pattern, with equal spacing between tiles and uniform grout lines.
Tile layout shall be adjusted to minimize the need for cutting tiles at corners, edges, and other obstructions.
3.3. Tile Installation:

Tiles shall be installed using the thin-set mortar adhesive, following the manufacturer's instructions.
Tiles shall be pressed firmly into the adhesive, ensuring full contact and coverage.
Spacer lugs or tile spacers shall be used to maintain consistent grout joints.
Tiles shall be periodically checked for level and plumb during installation.
3.4. Grouting:

Grout shall be mixed and applied according to the manufacturer's instructions.
Grout shall be applied using a rubber float, ensuring full and even coverage of grout joints.
Excess grout shall be removed from the tile surface with a damp sponge before it hardens.
Grout shall be allowed to cure for a minimum of 24 hours before any further work is performed.
3.5. Sealing:

All movement joints and areas exposed to water shall be sealed using the silicone-based sealant.
Sealant shall be applied according to the manufacturer's instructions and tooled to a smooth finish.
Quality Control:
4.1. Inspection:

The completed tile installation shall be inspected for any defects, such as cracked or chipped tiles, uneven grout lines, or other imperfections.
Any defective work shall be corrected before the final acceptance of the project.
4.2. Maintenance and Cleaning:

The tile wall shall be cleaned and maintained according to the tile and grout manufacturer's recommendations.
Warranty:
5.1. The tile installation shall be warranted for a period of one (1) year from the date of completion, covering defects in materials and workmanship.

Plastic Slotted Grate MIFAB
to suit 4" clear opening channels
Specification: T100-PGC-HPP plastic slotted grates are independently certified to meet Load Cla
C tested in
accordance with EN 1433 56,200 lbs. 250kN. The grate length is 19.69" (.50 m). The grates utiliz
the patented "Clipfix"
grate locking mechanism. The system (channel and grate) provides longitudinal shift protection.
USA: 1-800-465-2736 www.mifab.com CAN: 1-800-387-3880
T1400-PB with No Edge Rail
Specification:
e
's T1400-PB series channels shall be 39.4" (1000 mm) long with a 4" (100 mm) internal width and radius bottom.
Interconnecting
MIFAB
channel sections are made of high strength Glass Fiber Reinforced Polyester (GRP) and available in sloping (0.5%) and non-sloping (neutral)
channels. Each channel comes with no edge rail. Directional Change Channels available at neutral locations.
Installation devices, plastic end cap/outlet cap, catch basins and bottom outlets are available accessories. Grates (separat
Specification Sheets)
are available in in Load Class A-C in a variety of materials. Grates utilize the patented "Clipfix" locking mechanism.

EXTERIOR SHOWERS

By MOST DEPENDABLE FOUNTAINS, INC. www.mostdependable.com

Model 575 SM-DUAL FOOT AND SHOWER TOWER. Surface mounted. Oven baked powde coat.
Model 564 SM ADA compliant. Surface mounted. Oven baked powder coat.

REV	DATE	COMMENT
	ISSUED FOR CD REVIEW	APRIL 10 2023
	ISSUED FOR BID	DECEMBER 19 2023
	EXTERIOR SHOWERS REMOVED REISSUED FOR	JANUARY 24 2024

DRAWING TITLE: SPECIFICATIONS

NEW PUBLIC RESTROOMS
THE CITY OF CAPE MAY
702 BEACH AVE
CAPE MAY, NJ.

maria cerda-moreno architect
14 West Commerce St.
Bridgeton, New Jersey 08302
609-5793005
NJRAA/AIA01461900

DRAWN BY: JB
SCALE: AS NOTED
DATE: APRIL 10- 2023
JOB : CITY OF CAPE MAY

SIGNATURE

DRAWING #: A-8
SHEET 8 OF 8

ELECTRICAL GENERAL NOTES

1. DRAWINGS ARE DIAGRAMMATIC AND INDICATE GENERAL ARRANGEMENT OF SYSTEMS AND WORK. FOLLOW DRAWINGS IN LAYING OUT WORK AND CHECK DRAWINGS OF OTHER TRADES TO VERIFY SPACE CONDITIONS. MAINTAIN HEADROOM AND SPACE CONDITIONS IN ALL CASES.
2. THE CONTRACTOR SHALL BRING ANY CONFLICTS IN THE DRAWINGS TO THE ATTENTION OF THE ENGINEER DURING THE BIDDING PROCESS. IF NOT BROUGHT UP TO THE ENGINEER DURING THE BIDDING PROCESS THE MORE EXPENSIVE OPTION SHALL BE CHOSEN FOR BIDDING PURPOSES.
3. PASS RACEWAYS OVER WATER, STEAM OR OTHER PIPING WHEN PULL BOXES ARE NOT REQUIRED. NO RACEWAY SHALL BE INSTALLED WITHIN 6" OF STEAM OR HOT WATER PIPES OR APPLIANCES (EXCEPT PIPE CROSSINGS WHERE RACEWAY SHALL BE AT LEAST 3" FROM PIPE COVERS).
4. CUT CONDUIT ENDS SQUARE, REAM SMOOTH, PAINT MALE THREAD OF FIELD THREADED RACEWAYS WITH GRAPHITE BASE PIPE COMPOUND. DRAW UP TIGHT WITH RACEWAY COUPLING.
5. HORIZONTAL OR CROSS RUNS IN PARTITIONS AND WALLS ARE NOT PERMITTED.
6. DO NOT RUN CONDUIT IN PRECAST ROOF SLABS, IN 2" SLABS OR IN TERRAZZO FLOOR FINISH.
7. LEAVE WIRES WITH SUFFICIENT SLACK TO PERMIT FINAL CONNECTIONS.
8. PROVIDE NYLON FISH WIRE IN ALL EMPTY RACEWAYS OVER 10' LONG.
9. PROVIDE PULL BOXES EVERY 100' AND WHEREVER REQUIRED BY CODE FOR ALL EMPTY RACEWAY RUNS. COORDINATE PULLBOX LOCATIONS WITH OTHER TRADES IN FIELD.
10. VERIFY LOCATIONS OF OUTLETS AND SWITCHES IN FINISHED ROOMS WITH ARCHITECTURAL DRAWINGS OF INTERIOR DETAILS AND FINISH. IN CENTERING OUTLETS AND LOCATING BOXES AND OUTLETS, ALLOW FOR OVERHEAD PIPES, DUCTS AND MECHANICAL EQUIPMENT, VARIATIONS IN FIREPROOFING AND PLASTERING, WINDOW AND DOOR TRIM, PANELING, HUNG CEILINGS AND THE LIKE. CORRECT ANY INACCURACY RESULTING FROM FAILURE TO DO SO WITHOUT EXPENSE TO OWNER.
11. LOCATIONS INDICATED FOR LOCAL WALL SWITCHES ARE SUBJECT TO MODIFICATIONS AT OR NEAR DOORS. COORDINATE WITH ARCHITECT AND INSTALL SWITCH ON SIDE OPPOSITE HINGE. VERIFY FINAL HINGE LOCATIONS IN FIELD PRIOR TO SWITCH OUTLET INSTALLATION.
12. COVERS OF JUNCTION AND PULLBOXES SHALL BE READILY ACCESSIBLE.
13. PROVIDE PULLBOXES WHERE INDICATED, WHERE REQUIRED BY CODE AND WHEREVER NECESSARY TO FACILITATE PULLING OF WIRE. COORDINATE PULLBOX LOCATIONS WITH OTHER TRADES.
14. GENERALLY, DO NOT LOCATE JUNCTION AND PULL BOXES EXPOSED IN FINISHED SPACES. WHERE NECESSARY, REROUTE RACEWAYS OR MAKE OTHER ARRANGEMENTS FOR CONCEALMENT.
15. SUPPORT PANEL, JUNCTION AND PULLBOXES INDEPENDENTLY TO BUILDING STRUCTURE, WITH NO WEIGHT BEARING ON RACEWAYS.
16. EC IS RESPONSIBLE TO PROVIDE ACCESS PANELS FOR ANY CONCEALED ELECTRICAL WORK THAT MUST BE ACCESSIBLE EITHER BY CODE OR AS INDICATED IN THE DOCUMENTS. ALL ACCESS DOOR LOCATIONS SHALL BE REVIEWED AND APPROVED BY ARCHITECT PRIOR TO INSTALLATION OF DEVICE REQUIRING THE ACCESS PANEL. ALL ACCESS DOORS MUST MATCH THE FIRE RATING AND CONSTRUCTION TYPE OF THE CEILING OR WALL PENETRATION AS DESIGNATED ON THE ARCHITECTURAL DRAWINGS.
17. ALL ELECTRICAL EQUIPMENT INCLUDING BUT NOT LIMITED TO RACEWAYS, PULLBOXES, LUMINAIRES, ETC. SHALL BE HUNG FROM THE TOP CORD OR THE TOP OF A STEEL 'I' BEAM ONLY IN A STEEL STRUCTURE BUILDING.
18. CONNECT CONDUIT TO MOTOR CONDUIT TERMINAL BOXES WITH FLEXIBLE CONDUIT (MINIMUM 18" AND 50% SLACK). DO NOT TERMINATE IN OR FASTEN RACEWAYS TO MOTOR FOUNDATION.
19. PROVIDE 2#14 INDICATING PILOT LIGHT WIRES FROM PILOT LIGHT IN CONTROLLER TO LOAD SIDE OF DISCONNECT SWITCH. RUN WIRES IN BRANCH CIRCUIT CONDUIT AND INCREASE CONDUIT SIZE AS REQUIRED.
20. PULL NO THERMOPLASTIC WIRES AT TEMPERATURES BELOW 32°F. PROVIDE CABLE SUPPORTS FOR WIRE
21. IN RISER CONDUITS AS REQUIRED BY CODE., PROVIDE SEPARATE RACEWAYS FOR CONDUCTORS OF NORMAL AND EMERGENCY CIRCUITS. WHERE COMMON BOXES ARE USED, PROVIDE BARRIERS BETWEEN NORMAL AND EMERGENCY WIRING.
22. PROVIDE SEPARATE RACEWAYS FOR CONDUCTORS OF NORMAL AND EMERGENCY CIRCUITS. WHERE COMMON BOXES ARE USED, PROVIDE BARRIERS BETWEEN NORMAL AND EMERGENCY WIRING.
23. WIRE COLOR CODING SHALL BE AS PER CODE AND SPECIFICATION. WHERE COLOR-CODED CABLE IS NOT AVAILABLE, CERTIFY IN WRITING, AND REQUEST PERMISSION FOR OVERLAP COLOR TAPING OF CONDUCTORS (MINIMUM LENGTH 6") IN ALL ACCESSIBLE LOCATIONS. COLOR CODING MUST BE USED CONSISTENTLY FOR THE ENTIRE PROJECT.
24. CONNECT NEW WORK TO EXISTING WORK IN A NEAT AND ACCEPTABLE MANNER. RESTORE EXISTING DISTURBED WORK TO ITS ORIGINAL CONDITION, INCLUDING MAINTENANCE OF WIRING CONTINUITY AS REQUIRED.
25. CONNECT NEW WORK TO EXISTING WORK WITH MINIMUM INTERFERENCE TO EXISTING FACILITIES. TEMPORARY SHUTDOWNS ARE PERMISSIBLE ONLY WITH WRITTEN CONSENT OF THE OWNER. ALARM AND EMERGENCY SYSTEMS ARE NOT TO BE INTERRUPTED.
26. ELECTRICAL CONNECTIONS AND DISCONNECTS ARE SHOWN FOR DIAGRAMMATIC PURPOSES AND THE CONTRACTOR SHALL NOT BASE THEIR BID ON THE LOCATION OF THOSE CONNECTIONS AND/OR DISCONNECTS. SUBMISSION OF A BID INDICATES AN UNDERSTANDING THE CONTRACTOR WILL CONNECT THE ELECTRICAL CIRCUIT TO THE EQUIPMENT IN THE LOCATION SPECIFIED BY THE MANUFACTURE OR PER CONSTRUCTION RESTRICTIONS AT NO ADDITIONAL COST TO THE CLIENT.
27. FIRESTOPPING SHALL BE INSTALLED WHENEVER WIRING OR RACEWAYS CROSS FIRE RATED PARTITIONS. REFER TO THE ARCHITECTURAL PLANS FOR FIRE RATED PARTITION LOCATIONS. THE FIRESTOPPING SHALL MATCH OR EXCEED THE FIRE RATING OF THE PARTITION PENETRATED. ALL FIRESTOPPING SHALL BE A UL LISTED ASSEMBLY.
28. THE CONTRACTOR SHALL NOTE THAT THE BRANCH AND FEEDER CIRCUITS MAY HAVE BEEN INCREASED IN SIZE FOR VOLTAGE DROP AND OTHER REASONS. THIS MAY RESULT IN THE CABLE NOT FITTING IN THE ELECTRICAL EQUIPMENTS LUG OR TERMINAL. IF THIS HAPPENS THE CONTRACTOR SHALL REDUCE THE WIRE SIZE TO THE MAXIMUM SIZE THAT WILL FIT UNDER THE ELECTRICAL EQUIPMENTS LUG OR TERMINAL. PROVIDE AN IRREVERSIBLE SPLICE(S) OR OTHER APPROVED METHOD. THE LENGTH OF CABLE SHALL BE MINIMIZED TO DIRECTLY OUTSIDE THE EQUIPMENT. THE SPLICE(S) SHALL NOT TAKE PLACE INSIDE THE EQUIPMENT UNLESS THE EQUIPMENT IS UL LISTED FOR THAT PURPOSE. FOR EQUIPMENT NOT UL LISTED PROVIDE A SPLICE BOX, SIZED AS REQUIRED, OUTSIDE THE EQUIPMENT FOR THE SPLICE(S). THE NEMA RATING OF THE SPLICE BOX SHALL MATCH THE NEMA RATING OF THE ELECTRICAL EQUIPMENT. AHJ APPROVED REDUCING ADAPTERS SUCH AS THOSE FROM BURNDY ARE ACCEPTABLE ALTERNATES. EC SHALL GET PERMISSION FROM THE AHJ TO USE THIS METHOD.
29. ALL DEVICE ELEVATIONS SHALL BE MOUNTED IN ACCORDANCE WITH ANSI A117. ALL CONTROL DEVICES (IE: SWITCHES, ETC.) SHALL BE MOUNTED NO HIGHER THAN 48" AFF TO TOP OF DEVICE. ALL INSERTION DEVICES (IE: POWER, TELEPHONE, DATA RECEPTACLES, ETC.) SHALL BE MOUNTED NO LOWER THAT 15" AFF TO BOTTOM OF JUNCTION BOX. ALL DEVICES MOUNTED ABOVE A COUNTER NOT DEEPER THAN 24" SHALL BE MOUNTED 46" AFF TO TOP DEVICE. OTHER MOUNTING HEIGHTS WILL BE AS NOTED ON THE DRAWINGS.
30. PANEL BOARDS SHALL ALL MEET UL67 REQUIREMENTS AND COME WITH SERVICE ENTRANCE BARRIERS.
31. UNLESS OTHERWISE NOTED, MOUNTING HEIGHTS FROM FLOOR TO CENTERLINE OF OUTLET:

    RECEPTACLES, DATA AND TELEPHONES:

    GENERALLY - 25" TO BOTTOM OF OUTLET BOX OVER WORK BENCHES - 3'-6"

    WALL SWITCHES AND WALL TELEPHONES : 4'-0"(TO TOP OF JUNCTION BOX)

    WALL FIXTURES - 7'-6"

    MOTOR CONTROLLERS - 5'-0"

    FA AUDIO DEVICE/ STROBES - 6'-8" TO THE BOTTOM OF THE LENSE (OR 6" BELOW CEILING, WHICHEVER IS LOWER)

    FA STROBE LIGHTS - 6'-8" TO THE BOTTOM OF THE LENSE (OR 6" BELOW CEILING, WHICHEVER IS LOWER)

    FA PULL STATIONS NO LOWER THAN 3'-6"AFF OR HIGHER THAN 4'-0"AFF TO TOP OF DEVICE.

    CLOCKS - 7'-6"

    EXIT SIGN - MOUNT JUST ABOVE THE DOOR WHEN LOCATED AT A DOOR LOCATION, UNLESS OTHERWISE NOTED. WHEN NOT BY A DOOR 8'-0"AFF, UON.
32. ELECTRICAL CONTRACTOR IS RESPONSIBLE FOR COORDINATING ALL FINAL UTILITY CONNECTIONS WITH THE UTILITY COMPANIES. FOR EXAMPLE: IF THE PROJECT HAS AN EXISTING OR NEW SERVICE THE CONTRACTOR SHALL CALL THE UTILITY COMPANY AND TAKE OVER AS THE LEAD CONTACT PERSON FOR THE ADDITIONAL LOAD APPLICATION AND BE THE NEW POINT OF CONTACT FOR ANY CHANGES OR COORDINATION REQUIRED. THIS INTRODUCTION AND CHANGE OF POINT CONTACT SHALL HAPPEN WITHIN THE FIRST TWO WEEKS OF STARTING THE PROJECT. IT IS THE EC'S RESPONSIBILITY TO COMMUNICATE WITH THE UTILITY COMPANY SERVICE START DATES AS TO NOT DELAY THE PROJECT WITH INADEQUATE UTILITY SERVICES.

GENERAL NOTES

THE CONTRACTOR SHALL CONFORM TO THE LATEST BUILDING CODES:

2021 NEW JERSEY INTERNATIONAL BUILDING CODE

NEC 2020 WITH NEW JERSEY AMENDMENTS

APPLICABLE CODES

ELECTRICAL DEMOLITION NOTES

1. THE CONTRACTOR SHALL INCLUDE IN HIS BID ALL COSTS ASSOCIATED WITH REMOVALS AND RELOCATIONS OF ELECTRICAL WORK AS DESCRIBED IN THE SPECIFICATIONS, WITH ALLOWANCES FOR EXPECTED OR UNFORSEEN DIFFICULTIES WHEN CONCEALED WORK HAS BEEN OPENED. NO CLAIMS FOR ADDITIONAL WORK ASSOCIATED WITH DEMOLITION WILL BE ACCEPTED, EXCEPT IN CERTAIN CASES CONSIDERED JUSTIFIABLE BY THE ARCHITECT.
2. THE CONTRACTOR SHALL REMOVE AND/OR RELOCATE ALL EXISTING ELECTRICAL WORK WHICH INTERFERES WITH THE NEW ARCHITECTURAL AND ELECTRICAL LAYOUTS IN FULL COORDINATION WITH THE ARCHITECT'S DEMOLITION PLANS. ALL SYSTEMS WHICH ARE NO LONGER REQUIRED TO FUNCTION SHALL BE DE-ENERGIZED AND DISCONNECTED AT THE SOURCE OF POWER SUPPLY.
3. THE CONTRACTOR SHALL PERFORM DEMOLITION AND REMOVAL WORK WITH A MINIMUM OF INTERFERENCE TO FUNCTIONING ELECTRICAL SYSTEMS. ALL AFFECTED SYSTEMS SHALL BE RECONNECTED AND RESTORED.
4. DEMOLITION AND REMOVAL WORK SHALL BE PERFORMED IN A NEAT AND WORKMANLIKE MANNER. THE CONTRACTOR SHALL PATCH, REPAIR OR OTHERWISE RESTORE ANY DAMAGED INTERIOR OR EXTERIOR BUILDING SURFACE TO ITS ORIGINAL CONDITION.
5. THE CONTRACTOR SHALL REMOVE ALL ELECTRICAL OUTLETS, SWITCHES AND OTHER DEVICES, COMPLETE WITH ASSOCIATED WIRING, CONDUITS, ETC., FROM PARTITIONS THAT ARE TO BE REMOVED. WHERE THE REMOVAL OF THESE ITEMS DISRUPTS EXISTING WIRING THAT IS TO REMAIN, THE CONTRACTOR SHALL INSTALL JUNCTION BOXES AND OTHER DEVICES AND PROVIDE BYPASS CONNECTIONS NECESSARY TO MAKE CIRCUITS AFFECTED CONTINUOUS AND READY FOR OPERATION. OTHERWISE, WIRING SHALL BE REMOVED BACK TO THE NEAREST ELECTRICAL JUNCTION BOX THAT IS TO REMAIN OR TO PANELBOARD.
6. ALL RACEWAYS WHICH BECOME EXPOSED DURING THE ALTERATION WORK SHALL BE REMOVED AND REROUTED CONCEALED BEHIND FINISHED SURFACES.
7. ALL UNUSED OUTLET BOXES OR CAPPED FLOOR OUTLETS SHALL BE PROVIDED WITH MATCHING BLANK COVERS.
8. PORTIONS OF FEEDER RUNS TO BE REMOVED OR ABANDONED AS A RESULT OF DEMOLITION WORK, BUT WHICH ARE REQUIRED TO REMAIN ENERGIZED, SHALL BE CUT AT CONVENIENT LOCATIONS, REROUTED AND RECONNECTED. NEW FEEDER EXTENSIONS SHALL MATCH EXISTING IN CABLE TYPE, AMPACITY, CONDUIT SIZE, ETC..
9. THE CONTRACTOR SHALL NOTIFY THE OWNER OF THE PROJECTED DEMOLITION ANS PHASING SCHEDULE SO THAT REMOVAL OR RELOCATION OF AFFECTED UTILITIES MAY BE CARRIED OUT IN FULL COORDINATION WITH THE PROJECT REQUIREMENTS. THE CONTRACTOR SHALL FOLLOW THE ARCHITECT'S DEMOLITION AND PHASING SCHEDULE, AND PROCEED IN THE APPROPRIATE, SPECIFIED SEQUENCE.
10. ALL EXISTING MATERIAL WHICH IS SPECIFIED TO BE REMOVED UNDER THIS CONTRACT, SHALL BECOME THE PROPERTY OF THE CONTRACTOR, AND SHALL BE DISPOSED OF IN ACCORDANCE WITH ALL APPLICABLE LAWS AND REGULATIONS.
11. ALL EXISTING MATERIAL WHICH IS SPECIFIED TO BE REMOVED AND REUSED OR RETURNED TO THE OWNER SHALL BE CAREFULLY REMOVED AND PRESERVED, AND TURNED OVER TO THE OWNER IN OPERABLE CONDITION.
12. ARRANGE TO WORK CONTINUOUSLY, INCLUDING OVERTIME, IF REQUIRED, TO ASSURE THAT SYSTEMS SHUTDOWNS WILL BE MINIMIZED, AND LIMITED TO THE TIME REQUIRED TO MAKE FINAL CONNECTIONS AND PERFORM NECESSARY TESTS TO ASSURE CORRECT INSTALLATION.
13. THE SHUTDOWN OF EXISTING BUILDING SERVICES SHALL BE COORDINATED WITH THE OWNER. ARRANGEMENTS SHALL BE MADE, IN WRITING, AT LEAST FIVE (5) BUSINESS DAYS PRIOR TO ANY SCHEDULED SHUTDOWN.

POWER DEVICES

- DUPLEX RECEPTACLE
- CEILING MOUNTED RECEPTACLE
- GFCI TYPE RECEPTACLE
- CONCEALED JUNCTION BOX
- 208V PANEL, U.O.N.
- 1 — INDICATES CIRCUIT NUMBER
- WP — INDICATES DEVICE HAS A WEATHERPROOF WHILE IN USE COVER.
- + — INDICATES DEVICE IS MOUNTED ABOVE THE COUNTER.
- SPECIAL PURPOSE RECEPTACLE, MATCH EQUIPMENT SERVED
- J UNFUSED DISCONNECT SWITCH 30A/3P — INDICATES SIZE/NUMBER OF POLES OR SIZE PER CIRCUIT SIZE
- J FUSED DISCONNECT SWITCH 30A/30A/3P — INDICATES SWITCH SIZE/FUSE SIZE/NUMBER OF POLES OR SIZE PER CIRCUIT SIZE
- S_T MOTOR RATED SWITCH WITH THERMAL OVERLOADS

COMMUNICATION DEVICES

- TELEPHONE OUTLET, PROVIDE (1) 3/4"C WITH PULLSTRING AND PLASTIC BUSHING ON END TO THE NEAREST ACCESSIBLE CEILING SPACE.
- VOICE/DATA OUTLET, PROVIDE (1) 3/4"C WITH PULLSTRING AND PLASTIC BUSHING ON END TO THE NEAREST ACCESSIBLE CEILING SPACE.
- DATA OUTLET, PROVIDE (1) 3/4"C WITH PULLSTRING AND PLASTIC BUSHING ON END TO THE NEAREST ACCESSIBLE CEILING SPACE.

LUMINAIRES

AX — FIXTURE TYPE

TYPICAL LUMINAIRE, REFER TO THE LUMINAIRE OR LIGHTING SCHEDULE FOR ADDITIONAL INFORMATION.

XXX-XX — a — LOWER CASE LETTER INDICATES LOCAL SWITCH DESIGNATION.

CIRCUIT NUMBER, REFER TO THE PANELSCHEDULES FOR ADDITIONAL INFORMATION.

PANEL ID[NAME] UNLESS OTHERWISE NOTED.

- SERVICE LIGHT LUMINAIRE

WIRING DEVICES

- HOMERUN

LUMINAIRE SWITCHES

- S LUMINAIRE SWITCH
- S_3 3-WAY LUMINAIRE SWITCH
- S_4 4-WAY LUMINAIRE SWITCH
- S_P LUMINAIRE SWITCH WITH A PILOT LIGHT
- S_D DIMMER TYPE LUMINAIRE SWITCH
- S_K CAPTIVE KEY TYPE SWITCH
- S_a LUMINAIRE SWITCH — INDICATES LUMINAIRES IT WILL SWITCH
- S_{OR} OVERRIDE SWITCH
- M_S MOTION SENSOR TYPE LUMINAIRE SWITCH NOTE: THE MOTION SENSOR SHALL TURN OFF THE LUMINAIRE WITHIN 30 MINUTES OF AN OCCUPANT LEAVING THE SPACE.

NOT ALL SYMBOLS AND ABBREVIATIONS SHOWN ON THIS PLAN ARE USED IN THE FOLLOWING DRAWINGS.

ABBREVIATIONS

A - AMP
AF - AMP FRAME
AFC - AVAILABLE FAULT CURRENT
AFF - ABOVE FINISHED FLOOR
AIC - AMP INTERRUPTING CURRENT
AHJ - AUTHORITY HAVING JURISDICTION
AT - AMP TRIP
ATS - AUTOMATIC TRANSFER SWITCH
BFC - BELOW FINISHED CEILING
C - CONDUIT
CB, C/B - CIRCUIT BREAKER
CD - CANDELA
CT - CONTROL TRANSFORMER
DP - DISTRIBUTION PANEL
EC, E.C. - ELECTRICAL CONTRACTOR
EX - EXISTING TO REMAIN
EM - EMERGENCY
EMT - ELECTRICAL METALLIC TUBING
F - FOOT
G.B. - GLASS BREAK
GFCI, GFI - 5MA GROUND FAULT CIRCUIT INTERRUPTER
GFP - 30mA GROUND FAULT PROTECTION DEVICE
GND - GROUND
LTG - LIGHTING
MCC - MOTOR CONTROL CENTER
MDP - MAIN DISTRIBUTION PANEL
NL - NIGHT LIGHT
NTS, N.T.S. - NOT TO SCALE
PDU - POWER DISTRIBUTION UNIT
PNL - PANEL
PT - POTENTIAL TRANSFORMER
RE - REMOVE EXISTING
REC - RECEPTACLE
REX - RELOCATE EXISTING
RGC - RIGID GALVANIZED CONDUIT
RPP - REMOTE POWER PANEL
SA - SURGE ARRESTER
SLD - SINGLE LINE DIAGRAM
SPD - SURGE PROTECTIVE DEVICE
STC - STANDARD TEST CONDITIONS
TYP. - TYPICAL
UGE - UNDERGROUND ELECTRIC
UGT - UNDERGROUND TELECOMMUNICATIONS
U.O.N., UON - UNLESS OTHERWISE NOTED
V - VOLT
WP - WEATHERPROOF, WHILE IN USE **IN AN AREA WHERE DIRECT WATER HOSE SPRAY WILL OCCUR THIS WILL MEAN THE DEVICE IS NEMA 4X RATED FOR HOSE DOWN.
W - WALL MOUNTED
WD - WASHDOWN AREA DEVICES SHALL BE NEMA 4X HOSE POWER WASHER CAPABLE WHILE IN USE SUCH AS CALBRITE COVERS.
WG - WIRE GUARD
XFMR - TRANSFORMER
XP -EXPLOSION PROOF
3P - THREE(3) POLES
2P - TWO(2) POLES
1P - ONE(1) POLE
3R - NEMA 3R TYPE ENCLOSURE
4X - NEMA 4X TYPE ENCLOSURE

NOTES:

- (X) DRAWING NOTE - 'X' DENOTES NOTE NUMBER SHOWN ON PLAN.
- [X] KEY NOTE - 'X' DENOTES NOTE NUMBER SHOWN FOR ALL ELECTRICAL PLANS.
- ⬡X DEMOLITION NOTE - 'X' DENOTES NOTE NUMBER SHOWN ON PLAN

SINGLE LINE DIAGRAM

- XXXAF / XXXAT — CIRCUIT BREAKER
- KWH — UTILITY METER
- PANEL NAME — PANELBOARD
  AP = APPLIANCE
  LP = LIGHTING
  PP = POWER PANEL
  EL = EMERGENCY LIFESAFETY
  EC = CRITICAL EMERGENCY
  EE = ESSENTIAL EQUIPMENT

FOR ALL SINGLE LINE DIAGRAM SYMBOLS, DEVICES SHOWN ENCLOSED BY BOX, AS SHOWN HERE, IS TO BE INSTALLED WITHIN AN ENCLOSURE. PROVIDE NEMA TYPE 1 ENCLOSURE, U.O.N.

- ENCLOSED DISCONNECT SWITCH
- TRANSFORMER XO = GROUNDING ELECTRODE CONDUCTOR
- CT

HIRED PE NOTES:

THE CONTRACTOR SHALL BE AWARE THERE MAY BE NOTES ON THESE PLANS AND IN THE SPECIFICATIONS THAT REQUIRE THE CONTRACTOR TO HIRE A PROFESSIONAL ENGINEER TO SIGN AND SEAL VARIOUS STUDIES OR SUBMIT FINAL SHOP DRAWINGS FOR PERMIT PURPOSES. EXAMPLES ARE FIRE ALARM, SHORT CIRCUIT STUDY, ARC FLASH STUDY, COORDINATION STUDY, ETC. THE PROFESSIONAL ENGINEER SHALL BE LICENSED TO PROVIDE ENGINEERING SERVICES IN THE JURISDICTION THE PROJECT IS LOCATED. THE CONTRACTOR SHALL PROVIDE THE PROFESSIONAL ENGINEERS QUALIFICATIONS AS PART OF THE BID SUBMISSION.

PROJECT NOTES:

THE CONTRACTOR SHALL RECEIVE AND REVIEW ALL OF THE PROJECTS DRAWINGS AND SPECIFICATIONS SUCH AS ARCHITECTURAL, STRUCTURAL, HVAC, ELECTRICAL, PLUMBING, FIRE ALARM, SPRINKLER, SITE, ETC. TO UNDERSTAND THE FULL SCOPE OF WORK. FAILURE TO RECEIVE AND REVIEW THOSE PLANS DURING BIDDING WILL RESULT IN THE DENIAL OF EXTRA'S.

NEC 110-16

ALL SWITCHBOARDS (EACH SECTION), PANELBOARDS, ENCLOSED BREAKERS/SWITCHES, ATS'S, TRANSFORMERS, MOTOR STARTES, CONTRACTORS, INDUSTRIAL CONTROL PANELS, AND MOTOR CONTROL CENTERS SHALL BE FIELD MARKED TO WARN QUALIFIED PERSONS OF POTENTIAL ELECTRIC ARC FLASH HAZARDS. THE MARKING SHALL BE LOCATED IN A CLEARLY VISIBLE LOCATION TO QUALIFIED PERSON BEFORE EXAMINATION, ADJUSTMENT, SERVICING, OR MAINTENANCE OF THE EQUIPMENT.

SURGE PROTECTION REQUIREMENTS

CONTRACTOR SHALL PROVIDE SURGE PROTECTION DEVICES(SPD) ON ALL DISTRIBUTION PANELS AND BRANCH CIRCUIT PANELS. CONTRACTOR SHALL FOLLOW THE CHART BELOW. SURGE SUPPRESSORS SHALL BE CLOSE COUPLED TO THE PANEL TO ALLOW FOR THE SHORTEST WIRE RUN. IF WALL SPACE DOES NOT ALLOW FOR AN EXTERIOR SPD MANUFACTURE PANEL INTEGRATED SPD'S ARE ACCEPTABLE.

MINIMUM SURGE CURRENT CAPACITY BASED ON ANSI/IEEE C62.41 LOCATION CATEGORY	
CATEGORY	APPLICATION
C	SERVICE ENTRANCE LOCATIONS (SWITCHBOARDS, SWITCHGEAR, MCC, MAIN ENTRANCE)
B	HIGH EXPOSURE ROOF TOP LOCATIONS (DISTRIBUTION PANELBOARDS)
A	BRANCH LOCATIONS (PANELBOARDS, MCCS, BUSWAY)

NEC 110-22

EACH DISCONNECTING MEANS SHALL BE LEGIBLY MARKED TO INDICATE ITS PURPOSE UNLESS LOCATED AND ARRANGED SO THE PURPOSE IS EVIDENT. THE MARKINGS SHALL BE OF SUFFICIENT DURABILITY TO WITHSTAND THE ENVIRONMENT INVOLVED.

WHERE CIRCUIT BREAKERS OR FUSES ARE APPLIED IN COMPLIANCE WITH SERIES COMBINATION RATINGS MARKED ON THE EQUIPMENT BY THE MANUFACTURE, THE EQUIPMENT ENCLOSURE(S) SHALL BE LEGIBLY MARKED IN THE FIELD TO INDICATE THE EQUIPMENT HAS BEEN APPLIED WITH A SERIES COMBINATION RATINGS.

THE MARKINGS SHALL BE READILY VISIBLE AND STATE THE INFORMATION LISTED ABOVE.

CAUTION - SERIES COMBINATION SYSTEM

RATED ___ AMPERES. IDENTIFIED

REPLACEMENT COMPONENTS REQUIRED.

SYMBOL LEGENDS AND ABBREVIATIONS

DRAWING LIST

BD engineering
NJ CERTIFICATE OF AUTHORIZATION - 24GA28116100
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ISSUED FOR BIDDING
NOT FOR CONSTRUCTION
01/23/2024

DATE:_____

no.	by	description	date
		ISSUED FOR BIDDING	01/23/2024

revisions

CAPE MAY BOARDWALK BATHROOMS

702 BEACH AVENUE

CAPE MAY, NJ

project title

ELECTRICAL COVER SHEET

drawing name

scale AS NOTED

date 01/23/24
drawn by AW
project no. 220121

drawing no. E1.1

1/23/2024 9:56 AM

ELECTRICAL WORK SPECIFICATIONS

1. GENERAL:

A. THE "GENERAL CONDITIONS OF THE CONTRACT FOR CONSTRUCTION," AIA DOCUMENT A201, LATEST EDITION, AND THESE SPECIFICATIONS AS APPLICABLE ARE PART OF THIS CONTRACT.

B. ALL APPLICABLE CODES, LAWS AND REGULATIONS GOVERNING OR RELATING TO ANY PORTION OF THIS WORK ARE HEREBY INCORPORATED INTO AND MADE PART OF THESE SPECIFICATIONS, AND THERE PROVISIONS SHALL BE CARRIED OUT BY THE CONTRACTOR WHO SHALL INFORM THE OWNER, PRIOR TO SUBMITTING A PROPOSAL, OF ANY WORK OR MATERIAL WHICH VIOLATES ANY OF THE ABOVE LAWS AND REGULATIONS. ANY WORK DONE BY THE CONTRACTOR CAUSING SUCH VIOLATION SHALL BE CORRECTED BY THE CONTRACTOR AT THEIR OWN COST.

C. INVESTIGATE EACH SPACE THROUGH WHICH EQUIPMENT MUST BE MOVED. WHERE NECESSARY, EQUIPMENT SHALL BE SHIPPED FROM THE MANUFACTURE IN SECTIONS OF A SIZE SUITABLE FOR MOVING THROUGH AVAILABLE RESTRICTIVE SPACES. ASCERTAIN FROM THE BUILDING OWNER AND TENANT AT WHAT TIMES OF THE DAY EQUIPMENT MAY BE MOVED THROUGH ALL AREAS.

D. DRAWINGS ARE DIAGRAMMATIC AND INDICATE GENERAL ARRANGEMENT OF SYSTEMS AND WORK. CONDUIT ROUTING IS SHOWN DIAGRAMMATICALLY AND DOES NOT SHOW ALL OFFSETS, DROPS AND RISES OF RUNS. THE CONTRACTOR SHALL ALLOW IN HIS/HER PRICE FOR ROUTING OF CONDUIT TO AVOID OBSTRUCTIONS. COORDINATION WITH EXISTING SERVICES, INCLUDING THOSE OF OTHER TRADES, IS REQUIRED. MAINTAIN HEADROOM AND SPACE CONDITIONS.

E. INSTALL WORK AS TO BE READILY ACCESSIBLE FOR OPERATION, MAINTENANCE AND REPAIR. MINOR DEVIATIONS FROM THE DRAWINGS MAY BE MADE TO ACCOMPLISH THIS, BUT CHANGES, WHICH INVOLVE EXTRA COST, SHALL NOT BE MADE WITHOUT OUR OR OWNER APPROVAL.

F. REMOVAL AND RELOCATION OF CERTAIN EXISTING WORK MAY BE NECESSARY FOR THE PERFORMANCE OF THE GENERAL WORK. ALL EXISTING CONDITIONS CANNOT BE COMPLETELY DETAILED ON THE DRAWINGS. THE CONTRACTOR SHALL SURVEY THE SITE AND INCLUDE ALL CHANGES AND CHARGES IN MAKING UP THE WORK PROPOSED.

G. CONNECTIONS TO EXISTING WORK: INSTALL NEW WORK AND CONNECT TO EXISTING WORK WITH A MINIMUM INTERFERENCE TO EXISTING FACILITIES. TEMPORARY SHUTDOWNS OF EXISTING SERVICES SHALL BE PERFORMED AT NO ADDITIONAL CHARGES, AT TIMES NOT TO INTERFERE WITH NORMAL OPERATION OF EXISTING FACILITIES AND ONLY WITH WRITTEN CONSENT OF THE OWNER. ALARM AND EMERGENCY SYSTEMS SHALL NOT BE INTERRUPTED. MAINTAIN CONTINUOUS OPERATION OF THE EXISTING FACILITIES AS REQUIRED WITH NECESSARY TEMPORARY CONNECTIONS BETWEEN NEW AND EXISTING WORK. CONNECT NEW WORK TO EXISTING WORK IN NEAT AND ACCEPTABLE MANNER. RESTORE EXISTING DISTURBED WORK TO ORIGINAL CONDITION, INCLUDING MAINTENANCE OF WIRING CONTINUITY AS REQUIRED.

H. DISCONNECT, REMOVE AND/OR RELOCATE EXISTING MATERIAL, EQUIPMENT AND OTHER WORK AS NOTED OR REQUIRED FOR PROPER INSTALLATION OF NEW WORK.

I. ALL EXISTING MATERIAL, EQUIPMENT AND CONSTRUCTION DEBRIS TO BE REMOVED UNDER THIS CONTRACT SHALL BECOME THE PROPERTY OF THE CONTRACTOR WITH THE EXCEPTION OF SPECIFIC EQUIPMENT AND APPARATUS REQUESTED BY THE BUILDING REPRESENTATIVE, ARCHITECT OR AS NOTED TO BE RELOCATED ON THE DRAWINGS. REMOVED EQUIPMENT SHALL BE PROPERLY DISPOSED OF BY THIS CONTRACTOR.

J. THE CONTRACTOR SHALL KEEP ALL EQUIPMENT AND MATERIALS AND ALL PARTS OF THE BUILDING, EXTERIOR SPACES AND ADJACENT STREETS, SIDEWALKS AND PAVEMENTS, FREE FROM MATERIAL AND DEBRIS RESULTING FROM THE EXECUTION OF THIS WORK. EXCESS MATERIALS WILL NOT BE PERMITTED TO ACCUMULATE EITHER ON THE INTERIOR OR THE EXTERIOR.

K. SEAL OPENING THROUGH PARTITIONS, WALLS AND FLOORS WITH MINERAL WOOL OR OTHER NONCOMBUSTIBLE MATERIAL. ALL PENETRATIONS THROUGH NEW AND EXISTING RATED FIRE AND SMOKE PARTITIONS AND/OR FLOORS SHALL BE COMPLETELY SEALED USING MATERIALS AND METHODS DESCRIBED IN SUBSEQUENT "FIRE STOPPING" SPECIFICATIONS SECTIONS.

L. PROVIDE ALL NECESSARY FLASHING AND COUNTERFLASHING TO MAINTAIN THE WATERPROOFING INTEGRITY OF THE BUILDING AS REQUIRED BY THE INSTALLATION OR REMOVAL OF CONDUIT AND EQUIPMENT. PROVIDE EQUIPMENT CURBS AS REQUIRED.

M. THE WORK IN THE BUILDING SHALL BE DONE WHEN AND AS DIRECTED, IN A MANNER SATISFACTORY TO THE OWNER. THE WORK SHALL BE PERFORMED AS TO CAUSE THE LEAST POSSIBLE INCONVENIENCE AND DISTURBANCE TO THE PRESENT OCCUPANTS.

N. THE CONTRACTOR'S PROPOSAL FOR ALL WORK SHALL BE PREDICATED ON THE PERFORMANCE OF THE WORK DURING REGULAR WORKING HOURS. WHEN SO DIRECTED, HOWEVER, THE CONTRACTOR SHALL INSTALL WORK DURING OVERTIME HOURS AND THE ADDITIONAL COST TO BE CHARGED THEREFORE SHALL BE ONLY THE "PREMIUM" PORTION OF THE WAGES PAID.

O. UNLESS OTHERWISE SPECIFICALLY NOTED OF SPECIFIED, INCLUDE ALL CUTTING AND PATCHING OF EXISTING FLOORS, WALLS, PARTITIONS AND OTHER MATERIALS IN THE EXISTING BUILDING. THE CONTRACTOR SHALL RESTORE THESE AREAS TO ORIGINAL CONDITION.

P. ALL MATERIAL AND EQUIPMENT SHALL BE NEW UNLESS OTHERWISE NOTED AND SHALL BE IN ACCORDANCE WITH BUILDING STANDARDS.

Q. SUBMISSION OF A PROPOSAL SHALL BE CONSTRUED AS EVIDENCE THAT A CAREFUL EXAMINATION OF ALL OF THE PLANS APPLICABLE FOR THE PROJECT AND NOT JUST THE HVAC PLANS AND IS FAMILIAR WITH ANY PROPOSED CONDITIONS THAT WILL NEED TO COORDINATED IN THE FIELD. FOR EXISTING BUILDINGS: THE PORTIONS OF THE EXISTING BUILDING, EQUIPMENT, ETC., WHICH AFFECT THIS WORK, AND THE ACCESS TO SUCH SPACES, HAS BEEN MADE AND THAT THE CONTRACTOR IS FAMILIAR WITH EXISTING CONDITIONS AND DIFFICULTIES THAT WILL AFFECT THE EXECUTION OF THE WORK. THE CONTRACTOR IS RESPONSIBLE TO INDICATE ANY DISCREPANCIES BETWEEN THE CONTRACT DRAWINGS AND ACTUAL FIELD CONDITIONS PRIOR TO SUBMITTAL OF BID. SUBMISSION OF A PROPOSAL WILL BE CONSTRUED AS EVIDENCE THAT THE CONTRACTOR HAS TOROUGHLY REVIEWED ALL OF THE DOCUMENTATION ASSOCIATED WITH THE PROJECT AND IF AN EXISTING BUILDING REVIEWED ALL OF THE EXISTING CONDITIONS. LATER CLAIMS SHALL NOT BE MADE FOR LABOR, EQUIPMENT OR MATERIALS REQUIRED BECAUSE OF DIFFICULTIES ENCOUNTERED WHICH COULD HAVE BEEN FORESEEN DURING SUCH AN EXAMINATION AND REVIEW. THE ON-SITE INSPECTION SHALL VERIFY EXISTING CONDUIT (SIZES, CLEARANCES, ETC.) AND CONDITIONS.

R. INSURANCE: IN ACCORDANCE WITH BUILDING REQUIREMENTS AND SHALL INCLUDE A HOLD HARMLESS CLAUSE FOR OWNER AND ENGINEER.

S. THE FINAL ACCEPTANCE SHALL BE MADE AFTER THE CONTRACTOR HAS ADJUSTED HIS EQUIPMENT, TESTED THE VARIOUS SYSTEMS, DEMONSTRATED THAT IT FULFILLS THE REQUIREMENTS OF THE DRAWINGS AND SPECIFICATIONS AND HAS FURNISHED ALL THE REQUIRED CERTIFICATES OF INSPECTION AND APPROVAL.

2. SCOPE OF WORK:

A. THE SCOPE OF WORK SHALL CONSIST OF PROVIDING LABOR, MATERIALS, EQUIPMENT, SERVICES AND FEES NECESSARY FOR COMPLETE AND SAFE INSTALLATION IN CONFORMITY WITH THE NATIONAL ELECTRICAL CODE(NEC) AND ALL OTHER APPLICABLE INDUSTRY, STATE, NATIONAL AND LOCAL CODES AND AUTHORITIES HAVING JURISDICTION, AS INDICATED ON THE DRAWINGS AND HEREIN SPECIFIED.

B. ALL DRAWINGS, PLANS, DETAILS, SPECIFICATIONS AND SPECIFICATION ADDENDA ARE MADE PART OF THIS CONTRACT AND SHALL APPLY TO ALL WORK UNDER THE CONTRACT UNLESS OTHERWISE AMENDED, MODIFIED, SUPPLEMENTED OR SPECIFIED HEREIN.

C. THE CONTRACTOR SHALL FURNISH A WRITTEN GUARANTEE TO REPLACE OF REPAIR PROMPTLY AND ASSUME RESPONSIBILITY FOR ALL EXPENSES INCURRED FOR ANY WORKMANSHIP AND EQUIPMENT IN WHICH DEFECTS DEVELOP WITHIN ONE YEAR FROM THE DATED OF FINAL CERTIFICATE FOR PAYMENT AND/OR FROM DATE OR ACTUAL USE OF EQUIPMENT OR OCCUPANCY OF SPACES BY THE OWNER INCLUDED UNDER THE VARIOUS PARTS OF THE WORK, WHICHEVER DATE IS EARLIER. THIS WORK SHALL BE DONE AS DIRECTED BY THE OWNER. THIS GUARANTEE SHALL ALSO PROVIDE THAT WHERE DEFECTS OCCUR, THE CONTRACTOR SHALL ASSUME RESPONSIBILITY FOR ALL EXPENSES INCURRED IN REPAIRING AND REPLACING WORK OF OTHER TRADES AFFECTED BE DEFECTS, REPAIRS OR REPLACEMENTS IN EQUIPMENT SUPPLIED BY THE CONTRACTOR.

D. THE CONTRACTOR SHALL GIVE NECESSARY NOTICE, FILE DRAWINGS AND SPECIFICATIONS WITH ALL DEPARTMENTS HAVING JURISDICTION, OBTAIN PERMITS OR LICENSES NECESSARY TO CARRY OUT THIS WORK AND PAY ALL FEES THEREFORE. THE CONTRACTOR SHALL ARRANGE FOR INSPECTION AND TESTS OF ANY OR ALL PARTS OF THE WORK IF SO REQUIRED BY AUTHORITIES FOR, AND FURNISH TO THE OWNER BEFORE BILLING, ALL CERTIFICATES NECESSARY AS EVIDENCE THE WORK INSTALLED CONFORMS WITH ALL REGULATIONS WHERE THEY APPLY TO THIS WORK.

3. SHOP DRAWINGS:

A. PRIOR TO THE INSTALLATION OF ANY WORK AND PROCUREMENT OF EQUIPMENT, THE CONTRACTOR SHALL PROVIDE COMPLETE SETS OF COORDINATED SHOP DRAWINGS OF ALL NEW AND EXISTING EQUIPMENT, INDICATING CAPACITY, DIMENSIONS AND SEQUENCE OF OPERATION FOR WRITTEN APPROVAL BY THE ARCHITECT AND ENGINEER.

B. INDICATE ON EACH SHOP DRAWINGS SUBMITTED:

1) PROJECT NAME AND LOCATION

2) NAME OF ARCHITECT AND ENGINEER

3) ITEM IDENTIFICATION

4) APPROVAL STAMP OF THE PRIME CONTRACTOR

C. SUBMISSIONS:

1) SUBMISSIONS 11 IN X 17 IN OR SMALLER. IF THE SUBMISSION IS A CATALOG CUT, THEN THE CONTRACTOR SHALL SUBMIT ONE ORIGINAL AND TWO COPIES. OTHERWISE, HE SHALL SUBMIT THREE COPIES. THE ARCHITECT WILL FORWARD THE ORIGINAL AND ONE COPY (TWO COPIES WHEN NO ORIGINAL IS RECEIVED) TO THE ENGINEER. ALL CATALOG CUTS SHALL BE COMPLETE.

2) SUBMISSIONS LARGER THAN 11 IN X 17 IN. SUBMIT TWO PRINTS AND ONE PAPER SEPA TO THE ARCHITECT. THE ARCHITECT WILL FORWARD ONE PRINT AND THE PAPER SEPA TO THE ENGINEER.

D. SUBMIT SHOP DRAWINGS FOR THE FOLLOWING THE CLIENT HAS NOT CONTRACTED WITH BD ENGINEERING FOR CONSTRUCTION ADMINISTRATION SERVICES. COORDINATE WHICH SHOP DRAWINGS THE CLIENT WOULD LIKE US TO REVIEW:

1) CIRCUIT BREAKERS

2) PANELBOARDS(INCLUDING DIMENSIONS, SCHEDULES AND CATALOG CUTS).

3) RACEWAYS

4) WIRE AND CABLE

5) WALL SWITCHES

6) INSERTION RECEPTACLES

7) LUMINAIRES

8) TRANSFORMERS

4. AS-BUILT DRAWINGS AND EQUIPMENT OPERATIONAL INSTRUCTIONS:

A. UPON COMPLETION AND ACCEPTANCE OF WORK, CONTRACTOR SHALL FURNISH WRITTEN INSTRUCTIONS AND EQUIPMENT MANUALS AND DEMONSTRATE TO THE OWNER THE PROPER OPERATION AND MAINTENANCE OF ALL EQUIPMENT AND APPARATUS FURNISHED UNDER THE CONTRACT.

B. THESE INSTRUCTIONS SHALL BE TYPED ON 8-1/2 X 11 IN. PAPER AND BOUND IN THREE RING BINDERS WITH CLEAR ACETATE COVERS. CONTRACTOR SHALL GIVE THREE COPIES OF THE INSTRUCTIONS TO THE OWNER AND ONE COPY TO THE ENGINEER.

C. THE INSTRUCTION BOOKLET SHALL BEAR THE NAME, ADDRESS AND TELEPHONE NUMBER OF THE PROJECT, ARCHITECT AND ENGINEER.

D. REPRODUCIBLE "AS-BUILT" DRAWINGS PREPARED IN COMPUTER AIDED DRAFTED (AUTO CAD) FORMAT SHALL BE PROVIDED TO THE OWNER INDICATING THE AS INSTALLED CONDITIONS OF THE WORK. A COMPLETE "AS-BUILT" DRAWING FILE SHALL BE PROVIDED TO THE OWNER AFTER COMPLETION OF THE INSTALLATION.

5. GENERAL PROVISIONS FOR ELECTRICAL WORK:

A. SPECIFICATIONS ARE OF SIMPLIFIED FORM AND INCLUDE INCOMPLETE SENTENCES. WORDS OR PHRASES SUCH AS "THE CONTRACTOR SHALL", "SHALL BE", "FURNISH", "PROVIDE" "A", "THE", "ALL" HAVE BEEN OMITTED FOR BREVITY.

B. DEFINITIONS:

1) "PROVIDE": TO SUPPLY, INSTALL AND CONNECT UP COMPLETE AND READY FOR SAFE AND REGULAR OPERATION THE PARTICULAR WORK REFERRED TO UNLESS SPECIFICALLY OTHERWISE NOTED.

2) "INSTALL": TO ERECT, MOUNT AND CONNECT COMPLETE WITH RELATED ACCESSORIES

3) "FURNISH" OR "SUPPLY": TO PURCHASE, PROCURE, ACQUIRE AND DELIVER COMPLETE WITH RELATED ACCESSORIES.

4) "WORK": LABOR, MATERIALS EQUIPMENT, APPARATUS, CONTROLS, ACCESSORIES AND OTHER ITEMS REQUIRED FOR PROPER AND COMPLETE INSTALLATION

5) "WIRING": RACEWAY, FITTINGS, WIRE, BOXES AND RELATED ITEMS.

6) "CONCEALED": EMBEDDED IN MASONRY OR OTHER CONSTRUCTION. INSTALLED IN FURRED SPACES, WITHIN DOUBLE PARTITIONS OR HUNG CEILINGS, IN TRENCHES, IN CRAWL SPACES, OR IN ENCLOSURES.

7) "EXPOSED": NOT INSTALLED UNDERGROUND OR "CONCEALED" AS DEFINED ABOVE.

8) "SIMILAR" OR "EQUAL": EQUAL IN MATERIALS, WEIGHT, SIZE, DESIGN AND EFFICIENCY OF SPECIFIED PRODUCT.

C. GENERAL:

1) THE DRAWING SHOWS THE APPROXIMATE LOCATIONS OF ALL APPARATUS, THE EXACT LOCATIONS OF WHICH ARE SUBJECT TO THE APPROVAL OF THE OWNER, WHO RESERVES THE RIGHT TO MAKE ANY REASONABLE CHANGES IN THE LOCATION INDICATED WITHOUT EXTRA COST. WHILE THE GENERAL RUN OF CONDUIT AND CABLES ARE INDICATED ON THE DRAWING. IT IS NOT INTENDED THAT THE EXACT ROUTING OR LOCATIONS OF CONDUIT AND CABLES BE DETERMINED THEREFROM.

2) THE ELECTRICAL CONTRACTOR SHALL BE RESPONSIBLE FOR ALL REQUIRED ENDS, OFFSETS, PULL BOXES AND OBSTRUCTIONS. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO INSTALL HIS WORK TO CONFORM TO THE STRUCTURE, MAINTAIN HEADROOM AND KEEP OPENINGS AND PASSAGEWAYS CLEAR.

3) THE CONTRACTOR SHALL BE RESPONSIBLE TO COORDINATE WITH ALL TRADES.

4) WIRE ALL FIXTURES, DEVICES, ETC. TO RESPECTIVE PANEL AND CONTROLS AS SHOWN ON PLANS IN SYMBOL FORM.

5) THE CONTRACTOR SHALL BE RESPONSIBLE FOR CLEANUP AND REMOVAL FROM THE SITE OF RESULTING DEBRIS UPON COMPLETION OF WORK UNDER THIS SECTION.

6) PROVIDE SEPARATE SYSTEMS AND ENCLOSURES FOR 120/208 AND 277/480 VOLT POWER AND CONTROL WIRING. COMMON PULL BOXES AND JUNCTION BOXES ARE NOT ACCEPTABLE.

7) NEUTRAL SHARING IS NOT ACCEPTABLE. EACH CIRCUIT, IF REQUIRED, SHALL HAVE A SEPARATE AND DEDICATED NEUTRAL CONDUCTOR.

8) LOCATIONS INDICATED FOR LOCAL WALL SWITCHES ARE SUBJECT TO RELOCATIONS. AT OR NEAR DOORS INSTALL SWITCH INSIDE OPPOSITE HINGE, VERIFY FINAL DOOR HINGE. LOCATION IN FIELD PRIOR TO SWITCH OUTLET INSTALLATION.

9) HEIGHTS OF INSERTION AND CONTROL DEVICES. REFER TO THE ELECTRICAL GENERAL NOTES.

10) ERECT WALL AND SWITCH OUTLETS IN ADVANCE OF FURRING AND FIREPROOFING OUTLET BOXES SHALL BE SET SQUARE AND TRUE WITH BUILDING FINISH. SECURE TO BUILDING STRUCTURE BY ADJUSTABLE STRAP IRON OR GROUT IN WITH MASONRY. VERIFY OUTLET LOCATIONS IN FINISHED SPACES WITH ARCHITECTURAL DRAWINGS OF INTERIOR DETAILS AND FINISHES. PROVIDE BARRIERS BETWEEN SWITCHES CONNECTED TO DIFFERENT PHASES FOR VOLTAGES EXCEEDING 150 VOLTS TO GROUND. PROVIDE BARRIERS BETWEEN NORMAL ONLY AND NORMAL/EMERGENCY SWITCHES INSTALLED WITHIN A COMMON OUTLET BOX.

11) PANEL JUNCTION AND PULL BOXES LOCATED CLEAR OF OTHER TRADES, CONCEAL JUNCTION AND PULL BOXES IN FINISHED SPACES WHERE NECESSARY, REROUTE RACEWAYS OR MAKE OTHER ARRANGEMENTS FOR CONCEALMENT. BOXES SHALL BE ACCESSIBLE. SUPPORT BOXES FROM BUILDING STRUCTURE, INDEPENDENT OF CONDUIT, PROVIDE FLOOR-TO-CEILING CHANNELS FOR MOUNTING ON DRYWALL AND LIGHTWEIGHT CONSTRUCTION. OUTLET BOXES FOR FIXTURES RECESSED IN HUNG CEILINGS SHALL BE ACCESSIBLE THROUGH OPENING CREATED BY REMOVAL OF FIXTURE. SECURE TO BLACK IRON SUPPORT. MOTOR TERMINAL BOXES: COORDINATE WITH MOTOR BRANCH CIRCUIT AND WIRING, ADD BOX VOLUME WHERE REQUIRED.

D. TEMPORARY LIGHT AND POWER:

1) PROVIDE TEMPORARY LIGHT AND POWER SYSTEMS AT EARLIEST POSSIBLE DATE WITHIN THE CONSTRUCTION AREAS FOR THE REQUIREMENTS OF ALL TRADES AS HEREIN DESCRIBED. EXTEND SYSTEMS TO NEW CONSTRUCTION AS SOON AS PHYSICALLY POSSIBLE. MAINTAIN SYSTEM DURING WORKING HOURS OF ALL TRADES. COST OF ENERGY WILL BE PAID FOR BY OWNER. PROVIDE ALL REQUIRED MAINTENANCE, INCLUDING LAMPS AND SOCKETS.

E. QUALITY ASSURANCE:

1) QUALITY AND GAUGE OF MATERIALS: NEW, BEST OF THEIR RESPECTIVE KINDS, FREE FROM DEFECTS AND LISTED BY UNDERWRITERS LABORATORIES INC. OR OTHER NATIONALLY APPROVED TESTING AGENCY AND BEARING THEIR LABEL. MATERIALS AND EQUIPMENT OF SIMILAR APPLICATION SHALL BE OF SAME MANUFACTURER, EXCEPT AS NOTED.

2) ON COMPLETION OF THE WORK, THE ENTIRE WIRING SYSTEM SHALL BE ENTIRELY FREE FROM GROUNDS, SHORT CIRCUITS, OPENS, OVERLOADS AND IMPROPER VOLTAGES AND THOROUGH TEST SHALL BE MADE. FURNISH ALL LABOR AND MATERIALS AND INSTRUMENTS.

3) CURRENT CHARACTERISTICS:

a. SERVICE: 277/480 VOLT (AND 120/208 VOLT), 3 PHASE, 4 WIRE 60 HERTZ WITH GROUNDED NEUTRAL

b. DISTRIBUTION: 277/480 VOLT (AND 120/208 VOLT) 3 PHASE, 4 WIRE, 60 HERTZ WITH GROUNDED NEUTRAL.

4) HEIGHTS OF OUTLETS:

a. REFER TO THE ELECTRICAL GENERAL NOTES.

b. EXCEPTIONS: AT JUNCTION OF DIFFERENT WALL FINISH MATERIALS, ON MOLDING OR BREAK IN WALL SURFACE IN VIOLATION OF CODE, OR AS NOTED OR DIRECTED

F. PRODUCT DELIVERY, STORAGE AND HANDLING:

1) MOVING OF EQUIPMENT: WHERE NECESSARY, SHIP IN CARTED SECTIONS OF SIZE TO PERMIT PASSING THROUGH AVAILABLE SPACES.

2) ACCESSIBILITY: FOR OPERATIONS, MAINTENANCE AND REPAIR. MINOR DEVIATIONS SHALL BE PERMITTED. CHANGE OF MAGNITUDE OR INVOLVING EXTRA COST ARE NOT PERMISSIBLE WITHOUT REVIEW. GROUP CONCEALED ELECTRICAL EQUIPMENT REQUIRING ACCESS WITH EQUIPMENT FREELY ACCESSIBLE THROUGH ACCESS DOORS.

G. MATERIALS:

1) NAMEPLATES: PROVIDE BLACK LAMINATED SHEET WITH 3/4 IN. WHITE LETTERING, FASTENED EPOXY CEMENT FOR EACH DISCONNECT SWITCH, CIRCUIT BREAKER, PANEL, CABINET, TRANSFORMER, ENCLOSURE MOTOR CONTROLLER AND THE LIKE. NAMEPLATES SHALL DESCRIBE THE NAME AND NUMBER OF EACH COMPONENT.

2) CABLE TAGS: TAG EACH CONDUCTOR PASSING THROUGH SPLICE OR PULLBOX WITH A WHITE LINEN TAG, INDICATING POINT OF ORIGIN AND TERMINATION OF THE CIRCUIT.

3) INSERTS AND SUPPORTS:

a. INSERTS: STEEL, SLOTTED TYPE, FACTORY PAINTED.

b. USE THREADED RODS AND UNISTRUT TYPE SUPPORTS DESIGNED TO CARRY THE WEIGHT REQUIRED.

c. SUPPORTS FROM BUILDING CONSTRUCTION: INSERTS, BEAM CLAMPS, STEEL FISHPLATES (IN CONCRETE FILL ONLY), CANTILEVER BRACKETS OR VERIFY SUPPORT TYPES WITH OTHER MEANS. THE ARCHITECT AND/OR STRUCTURAL ENGINEER IF A STRUCTURAL ENGINEER IS NOT ON THE PROJECT THE CONTRACTOR SHALL BE RESPONSIBLE FOR HIRING A QUALIFIED LICENSED STRUCTURAL ENGINEER.

d. GROUPED LINES AND SERVICES: TRAPEZE HANGERS OF BOLTED ANGLES OR CHANNELS

e. WHERE BUILDING CONSTRUCTION IS INADEQUATE: PROVIDE ADDITIONAL FRAMING. SUBMIT FOR REVIEW

H. PAINT SHALL BE THE BEST GRADE FOR ITS PURPOSE. DELIVER IN ORIGINAL SEALED CONTAINERS AND APPLY IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS. COLORS SHALL BE AS SELECTED BY ARCHITECT OR ENGINEER. UTILIZE GALVANIZED IRON PRIMER ON PANEL AND PULL BOXES, AFTER FABRICATION. UTILIZE HOT DIPPED GALVANIZED OR DIPPED IN ZINC CHROMATE FOR: OUTLET BOXES, JUNCTION BOXES, CONDUIT HANGERS, RODS, INSERTS AND SUPPORTS. RED LEAD OR ZINC CHROMATE WITH FINISH TO MATCH SURROUNDINGS SHALL BE USED FOR MARKED SURFACES OF STEEL EQUIPMENT AND RACEWAYS. A FIELD-APPLIED ZINC CHROMATE PRIME COAT SHALL BE UTILIZED FOR STEEL OR IRON WORK.

I. BRUSH AND CLEAN WORK PRIOR TO CONCEALING, PAINTING AND ACCEPTANCE. PAINTED EXPOSED WORK SOILED OR DAMAGED; CLEAN AND REPAIR TO MATCH ADJOINING WORK BEFORE FINAL ACCEPTANCE. REMOVE DEBRIS FROM INSIDE AND OUTSIDE OF MATERIAL AND EQUIPMENT.

J. FINAL LOCATIONS AND MOUNTING ORIENTATIONS OF ALL SWITCHES, RECEPTACLES, AND LIGHT FIXTURES SHALL BE VERIFIED WITH ARCHITECT PRIOR TO ROUGH IN.

K. ALL ACCESS DOOR LOCATIONS SHALL BE REVIEWED BY ARCHITECT PRIOR TO INSTALLATION.

6. DEMOLITION:

A. "SELECTIVE DEMOLITION" IS HEREBY DEFINED TO INCLUDE BUT IS NOT NECESSARY LIMITED TO THE REMOVAL OF THE FOLLOWING EXISTING MATERIALS, ITEMS AND EQUIPMENT.

1) REFER TO THE ELECTRICAL PLANS FOR THE EXTENT OF DEMOLITION.

2) REFER TO EXISTING DRAWINGS AND SITE CONDITIONS FOR ALL REMOVAL OF WORK NECESSARY FOR COMPLETION OF NEW WORK AS SHOWN. EACH BIDDER SHALL CAREFULLY EXAMINE THE PREMISES AND DOCUMENTS DURING THE BIDDING PERIOD AND ASCERTAIN THE EXTENT OF REMOVAL OF EXISTING WORK. IF ADDITIONAL WORK IS NOTED BY THE CONTRACTOR, CALL IT TO THE ATTENTION OF THE ARCHITECT PRIOR TO SUBMITTING BID. BY SUBMITTING A BID, THE CONTRACTOR WILL HAVE DEEMED TO HAVE MADE SUCH EXAMINATION TO HAVE ACCEPTED SUCH CONDITIONS AND TO HAVE MADE ALLOWANCES IN PREPARING HIS BID.

7. CUTTING AND PATCHING:

A. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL CUTTING AND PATCHING OF THE EXISTING AND NEW CONSTRUCTION WORK, WHICH MAY BE REQUIRED FOR THE PROPER INSTALLATION OF THE ELECTRICAL WORK. ALL PATCHING SHALL BE OF THE SAME MATERIALS, WORKMANSHIP, AND FINISH AND SHALL ACCURATELY MATCH ALL SURROUNDING WORK.

B. CORE BORING OF CONCRETE FLOORS AND/OR WALLS IF REQUIRED, IS THE RESPONSIBILITY OF THE ELECTRICAL CONTRACTOR.

8. COORDINATION:

A. THE CONTRACTOR SHALL VERIFY LOCATIONS OF ALL EQUIPMENT WITH THE ARCHITECTURAL DRAWINGS, IN CENTERING OUTLETS AND LOCATING BOXES AND OUTLETS, ALLOW FOR OVERHEAD PIPES, DUCTS AND MECHANICAL EQUIPMENT, VARIATIONS IN FIRE PROOFING AND PLASTERING. WINDOW AND DOOR TRIM, PANELING HUNG CEILINGS AND THE LIKE AND CORRECT ANY INACCURACY RESULTING FROM FAILURE TO DO SO WITHOUT EXPENSES TO THE OWNER.

9. EQUIPMENT FURNISHED BY OTHERS:

A. THE CONTRACTOR SHALL FURNISH AND INSTALL WIRING FOR EQUIPMENT FURNISHED BY OTHERS, AS SHOWN ON DRAWINGS, COORDINATE WITH ALL OTHER TRADES OR DETAILS FOR INSTALLATION. THE TERM "WIRING" AS USED HEREIN, INCLUDES BUT IS NOT LIMITED TO, FURNISHING AND INSTALLING CONDUIT, WIRE, JUNCTION BOXES, DISCONNECTS AND MAKING CONNECTIONS. CONTRACTOR SHALL CHECK ARCHITECTURAL, MECHANICAL AND PLUMBING. DRAWINGS AND SPECIFICATIONS FOR EQUIPMENT TO BE INSTALLED BY OTHERS, CONTRACTOR SHALL BE RESPONSIBLE FOR PROPER WIRING AND NECESSARY ELECTRICAL ADJUSTMENTS TO EQUIPMENT TO CONFORM TO SPECIFIED REQUIREMENTS OF THE EQUIPMENT.

10. LOW-VOLTAGE DISTRIBUTION EQUIPMENT:

A. PROVIDE COMPLETE EQUIPMENT INCLUDING: SWITCHES, FUSES, CIRCUIT BREAKERS, PANELS AND TRANSFORMERS FROM ONE OF THE FOLLOWING APPROVED MANUFACTURE'S: SQUARE D, SIEMENS, CUTLER HAMMER, GE AND BUSSMAN.

B. ALL EQUIPMENT SHALL CONFORM TO NEMA, ANSI, DOE AND IEEE STANDARDS.

C. DISCONNECT SWITCHES SHALL BE FUSED OR NONFUSED AS NOTED. VOLTAGE SHALL BE AS REQUIRED. SWITCHES SHALL BE HEAVY DUTY, EXCEPT AS NOTED, AND HORSEPOWER RATED FOR MOTOR LOADS. TOGGLE TYPE SWITCHES SHALL BE NONFUSED, LOAD BREAK, HAVING MAXIMUM RATINGS OF 20 AMP AT 600 VOLTS AND 30 AMP AT 240 VOLTS. KNIFE-BLADE TYPE SWITCHES SHALL BE LOAD BREAK, QUICK-MAKE-QUICK-BREAK, UL CLASS R UP TO 600 AMP. MAXIMUM RATING EXCEPT AS NOTED SHALL BE 800 AMP. ARC QUENCHERS SHALL BE PROVIDED. ALL SWITCH ENCLOSURES SHALL BE DEAD FRONT, NEMA, TYPE 1 EXCEPT AS NOTED. ACCEPTABLE MANUFACTURES ARE SQUARE D, SIEMENS, CUTLER HAMMER AND GE.

D. CIRCUIT BREAKERS: MOLDED CASE BREAKERS SHALL BE THERMAL-MAGNETIC, QUICK-MAKE-QUICK-BREAK, BOLT-ON TYPE, MANUALLY OPERATED WITH INSULATED TRIP-FREE HANDLE. MULTI-POLE TYPE BREAKERS SHALL CONTAIN INTERNAL TRIP BAR. TERMINALS SHALL BE SUITABLE FOR COPPER OR ALUMINUM CABLE. FURNISH AUXILIARY DEVICES WHERE REQUIRED FOR SHUNT-TRIPING, OPEN AND CLOSE MOTOR OPERATOR AND ALARM INDICATION. ENCLOSURES SHALL BE DEAD FRONT, NEMA TYPE 1, AS NOTED. FRAMES IC AND INTERCHANGEABLE TRIPS SHALL BE AS FOLLOWS:

a. CIRCUIT BREAKERS TO BE INSTALLED IN EXISTING PANEL BOARDS, SHALL BE OF THE SAME MANUFACTURE TYPE AND A.I.C. RATING AS PRESENTLY IN USE.

E. DISTRIBUTION PANELS: SWITCHING UNITS SHALL BE 3 PHASE, 4 WIRE CIRCUIT-BREAKER TYPE UNLESS OTHERWISE NOTED ON PANEL SCHEDULES. BUS BARS SHALL BE HARD DRAWN COPPER, MINIMUM 98 PERCENT CONDUCTIVITY, SILVER, OR TIN-PLATED JOINTS. PROVIDE A COPPER FULLY RATED GROUND BUS BAR. CABINETS SHALL BE GALVANIZED SHEET STEEL BACK BOX, WITH DOOR AND TRIM AND LAPPED AND WELDED CORNERS. HARDWARE SHALL BE CHROME-PLATED WITH FLUSH LOCK/LATCH HANDLE ASSEMBLY (UP TO 48 IN HIGH DOORS) OR VAULT HANDLE, LOCK AND 3-POINT CATCH (LARGER THAN 48 IN HIGH DOORS). HINGES SHALL BE SEMI-CONCEALED, 5-KNUCKLE STEEL WITH NONFERROUS PINS, 180-DEG OPENING, LOCATED A MAXIMUM 26 IN. ON CENTERS. PROVIDE DOOR-IN-DOOR CONSTRUCTION. MINIMUM GUTTER SPACES FOR LIGHTING PANELS SHALL BE 5-3/4 IN SIDES, TOP AND BOTTOM. DIRECTORY HOLDER SHALL BE METAL FRAME WITH CLEAR PLASTIC TRANSPARENT COVER. A TYPEWRITTEN LIST INDICATING FEEDER CABLE AND CONDUIT SIZE, CIRCUIT NUMBERS, OUTLETS SUPPLIED AND THEIR LOCATIONS SHALL BE PROVIDED. PANELS SHALL MEET UL 67 REQUIREMENTS FOR SERVICE ENTRANCE BARRIERS.

F. BALANCE THE LOAD OVER PHASES WHEN NEW CIRCUITS ARE ADDED TO NEW OR EXISTING PANELS. PROVIDE MULTI-CABLE LUGS WHERE REQUIRED. DOUBLE LUGGING SHALL NOT BE PERMITTED, MOUNTING HEIGHT SHALL BE A MAXIMUM OF 6 FT-6 IN FROM FLOOR TO TOP SWITCH UNIT. UPDATE DIRECTORIES ON EXISTING PANELBOARDS WHERE CIRCUITING IS CHANGED.

G. TESTS: OPEN AND CLOSE LOAD BREAK SWITCHING DEVICES UNDER LOAD.

H. TRANSFORMERS SHALL MEET THE LATEST DOE(DEPARTMENT OF ENERGY), LOCAL AND/OR STATE REQUIREMENTS.

11. GROUNDING:

A. AN EQUIPMENT GROUNDING CONDUCTOR COMMONLY DESCRIBED AS A "GREEN WIRE" SHALL BE PROVIDED FOR ALL BRANCH CIRCUITS PROTECTED BY OVERCURRENT DEVICES. "GREEN GROUND" WIRE SHALL ALSO BE PROVIDED FOR FLEXIBLE CONDUIT AND MOTOR CIRCUITS.

12. RACEWAYS:

A. PROVIDE RACEWAYS COMPLETE WITH BOXES, FITTINGS AND ACCESSORIES. CONDUIT OR TUBING SIZES REFERRED TO IN SPECIFICATIONS AND ON DRAWINGS ARE NOMINAL DIAMETERS. MINIMUM DIAMETER SHALL BE 3/4IN.

B. MATERIALS

1) RACEWAYS:

a. RIGID STEEL CONDUIT: FULL-WEIGHT PIPE, GALVANIZED THREADED.

b. ELECTROMETALLIC TUBING (EMT) THIN WALL PIPE, GALVANIZED THREADLESS. USE EXCLUSIVELY FOR EMERGENCY BRANCH CKT WIRING.

c. FLEXIBLE STEEL CONDUIT: CONTINUOUS STEEL STRIP, GALVANIZED.

d. WIREWAYS: WIRE SHALL BE AS NOTED, MINIMUM NUMBER 16GA STEEL WITH GROUND CONTINUITY. FINISH SHALL BE BAKED ENAMEL. COVERS SHALL BE SCREW ON.

2) FITTING AND ACCESSORIES:

a. RIGID STEEL: NONSPLIT, THREADED, STEEL OR MALLEABLE IRON. ZINC DIE CAST NOT PERMITTED.

b. ELECTROMETALLIC TUBING: COMPRESSION TYPE FOR 2" AND UNDER. SET SCREW TYPE FOR 2" AND LARGER. GALVANIZED RIGID STEEL ELBOWS FOR 2" OR LARGER. C. FLEXIBLE METALLIC CONDUIT: ANGLE WEDGE TYPE WITH INSULATED THROAT.

c. PROVIDE PLASTIC BUSHINGS AT THE END OF ALL CONDUITS WHERE A WIRE WILL PASS THROUGH.

3) BOXES:

a. OUTLET BOXES: EXCEPT AS OTHERWISE REQUIRED BY CONSTRUCTION. DEVICES OR WIRING, BOXES SHALL BE STAMPED STEEL, 4 IN. SQUARE OR OCTAGON FOR FIXTURES. BOXES ABOVE CEILING SHALL BE 1-1/2 IN. DEEP. BOXES IN CEILING OR SLAB SHALL BE 3" DEEP. BOXES IN WALL FOR FIXTURES SHALL BE 2-3/4" DEEP. BOXES IN WALL FOR RECEPTACLES AND SWITCHES SHALL BE 1-1/2 IN. DEEP. FURNISH WITH RAISED COVERS AND FIXTURE STUDS WHERE REQUIRED. WITHOUT FIXTURE OR DEVICE: FURNISH BLANK COVER. OFFSET BACK-TO-BACK OUTLETS WITH A MINIMUM 6 IN. SEPARATION.

b. JUNCTION AND PULL BOXES: GALVANIZED SHEET STEEL WITH SCREW-ON COVERS, EXCEPT AS NOTED. FURNISH WITH INSULATED SUPPORTS FOR CABLES. LOCATIONS SHALL BE AS NOTED OR REQUIRED AND ACCESSIBLE. PROVIDE BARRIERS IN NEW AND RENOVATED BOXES IN BETWEEN 120/208 VOLT AND 277/480 VOLT WIRING AND BETWEEN EMERGENCY AND NORMAL LIGHTING.

c. FLOOR BOXES SHALL BE SUITABLE FOR CONDUIT AND DEVICES NOTED. RAISED OUTLETS SHALL BE HUBBELL #B2414 SERIES WITH ABOVE FLOOR FITTING. TELEPHONE: BUSHED HOLE. POWER: DUPLEX RECEPTACLE OR OTHER AS NOTED. INCREASE SIZE TO SUIT AS NECESSARY. FLUSH OUTLETS SHALL BE HUBBELL #B2414 SERIES WITH FLUSH FLOOR FITTING FOR TELEPHONE AND FLUSH DUAL FLAP COVER WITH RECEPTACLE FOR POWER AS NOTED. INCREASE SIZE TO SUIT AS NECESSARY.

d. PROVIDE RACEWAYS ONLY AS HEREIN SPECIFIED, EXCEPT AS NOTED. RACEWAYS SHALL BE RUN CONCEALED, EXCEPT AS NOTED.

e. PROVIDE RACEWAY SUPPORT UTILIZING CEILING TRAPEZE, STRAP HANGERS OR WALL BRACKETS. PROVIDE U-BOLTS AT EACH FLOOR LEVEL OR RISER RACEWAYS AND CONNECTED TO ACCEPTABLE SUPPORTS. PROVIDE RISER CLAMPS AT EACH FLOOR LEVEL OF RISER RACEWAYS AND RESTING ON SLAB. FOR THROUGH-THE-FLOOR SYSTEMS, UTILIZE AN ASSEMBLY SIMILAR TO HUBBELL FIRE RATED POKE-THROUGH -FLOOR BOX SYSTEM. FOR ABOVE FLOOR FITTINGS TELEPHONE SHALL BE BUSHED HOLE AND POWER SHALL BE DUPLEX RECEPTACLE OR OTHER AS NOTED. PROVIDE SEPARATION BARRIER BETWEEN POWER AND TELEPHONE COMPARTMENTS. PROVIDE JUNCTION BOX ON UNDERSIDE OF FLOOR. PACK FITTING TO RESTORE FIRE RATING OF FLOOR.

f. SECURE ALL RACEWAYS TO SUPPORTS WITH PIPE STRAPS OR U-BOLTS. SPACING OF SUPPORTS SHALL BE A MINIMUM OF 10 FT ON CENTER FOR METALLIC RACEWAY AND AS REQUIRED FOR NONMETALLIC RACEWAY. SPACING SHALL BE 5 FT ON CENTER FOR WIREWAYS AND PER CODE AND AS NOTED ON OTHERS. MOUNT SUPPORTS TO STRUCTURE MASONRY WITH TOGGLE BOLTS ON HOLLOW MASONRY, EXPANSION SHIELDS OR INSERTS

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ISSUED FOR BIDDING
NOT FOR CONSTRUCTION
01/23/2024

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NO. GE 45801

DATE:_______

no.	by	description	date
		ISSUED FOR BIDDING	01/23/2024

revisions

CAPE MAY
BOARDWALK BATHROOMS
702 BEACH AVENUE
CAPE MAY, NJ

project title

ELECTRICAL SPECIFICATIONS

drawing name

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IN CONCRETE AND BRICK, MACHINE SCREWS ON METAL, BEAM CLAMPS ON FRAMEWORK, WOOD SCREWS ON WOOD, AND PAN THROUGH STRAPS IN METAL DECK. NAILS, RAW PLUGS OR WOOD PLUGS SHALL NOT BE PERMITTED. WHERE REQUIRED BY STRUCTURE, FURNISH THROUGH BOLTS AND FISH PLATES.

g. EXPOSED RACEWAYS SHALL BE RUN PARALLEL WITH OR AT RIGHT ANGLES TO WALLS. PROVIDE CLEARANCE WITH WATER, STEAM OR OTHER PIPING (MINIMUM 3 IN. SEPARATION FROM STEAM AND HOT WATER PIPES, EXCEPT 1 IN. FROM PIPE COVER AT CROSSINGS AND 18 IN. FOR PARALLEL RUNS). FOR HUNG CEILING OUTLETS, RUN IN HUNG CEILING AND CONNECT TO CEILING SUPPORT CHANNELS. IN MASONRY AND POURED CONCRETE, RUN VERTICALLY ONLY.

h. MAINTAIN GROUNDING CONTINUITY OF INTERRUPTED METALLIC RACEWAYS WITH GROUND CONDUCTOR, AND IN FLEXIBLE CONDUIT FOR FEEDERS AND MOTOR TERMINAL CONNECTIONS.

i. EMPTY RACEWAYS OVER 10' LONG: PROVIDE FISH OR PULL WIRE, GALVANIZED OR NYLON PVC.

j. RIGID STEEL CONDUIT SHALL BE PERMITTED FOR FEEDERS AND BRANCH CIRCUITS. PAINT THREADS OF FIELD-THREADED CONDUIT WITH GRAPHITE-BASE PIPE COMPOUND AND BUTT CONDUIT ENDS. TOUCH UP MARRED SURFACES AND FIELD-CUT THREADS, CRC-COLD GALVANIZED.

k. EMT SHALL BE PERMITTED FOR FEEDER AND BRANCH CIRCUITS. IN DRY LOCATIONS, DRY WALLS, HUNG CEILINGS. HOLLOW BLOCK WALLS AND FURRED SPACES. EMT SHALL NOT BE PERMITTED IN RAISED FLOORS OR FOR VERTICLE RISERS THROUGH FLOORS IN A MULTI-STORY BUILDING.

l. FLEXIBLE STEEL CONDUIT SHALL BE UTILIZED FOR SHORT CONNECTIONS WHERE RIGID CONDUIT IS IMPRACTICAL- FROM OUTLET BOX TO RECESSED LIGHTING FIXTURE: PROVIDE MINIMUM 4 FT AND MAXIMUM 6 FT LENGTHS. FOR FINAL CONNECTION TO MOTOR TERMINAL BOX, TRANSFORMER AND OTHER VIBRATING EQUIPMENT: PROVIDE WITH POLYVINYL SHEATHING AND GROUND CONDUCTOR. MINIMUM LENGTH: 18 IN. WITH SLACK. CONNECT GROUND CONDUCTOR TO ENCLOSURE OR RACEWAY AT EACH END. FOR EXPANSION JOINT CROSSINGS, CROSS AT RIGHT ANGLES AND ANCHOR ENDS.

m. CUT CONDUIT ENDS SQUARE REAM SMOOTH. PAINT MALE THREADS OF FIELD THREADED RACEWAYS WITH GRAPHITE BASE PIPE COMPOUND. DRAW UP TIGHT WITH RACEWAY COUPLING.

n. ALL COUPLINGS ON EMT RACEWAYS SHALL BE COMPRESSION TYPE UP TO AND INCLUDING 2" CONDUIT. SET SCREW TYPE FITTINGS SHALL BE USED ON EMT CONDUIT LARGER THAN 2".

o. EXPANSION FITTINGS SHALL BE INSTALLED AT RIGHT ANGLES WITH CLIP JOINT CENTERED N EXPANSION JOINT. PROVIDE A LENGTH OF RUN IN ACCORDANCE MANUFACTURER'S RECOMMENDATIONS. PRESET FITTINGS SHALL ALLOW FOR TEMPERATURE VARIATION.

p. RACEWAYS PASSING THROUGH FIRE-RATED CONSTRUCTION: SEAL OPENING WITH FIRE SEALANT TO MATCH THE FIRE RATING OF THE PARTITION. COORDINATE WITH THE ARCHITECT.

q. PROVIDE RACEWAYS PERFORM CONTINUITY TESTS OF RESISTANCE OF FEEDER CONDUITS FROM SERVICE TO POINT OF FINAL DISTRIBUTION USING I CONDUCTOR RETURN. MAXIMUM RESISTANCE SHALL BE 25 OHMS.

13. WIRE AND CABLE:

A. PROVIDE WIRE AND CABLE COMPLETE WITH ACCESSORIES. SIZE REFERENCE SHALL BE AWG AS NOTED.

B. CONDUCTORS SHALL BE COPPER, ASTM STANDARD SOLID (NO. 10 AND SMALLER) OR STRANDED (NO. 8 AND LARGER). GENERAL USE CABLING SHALL BE NO.12 MINIMUM. AT 120 VOLTS AND OVER 100 FT CIRCUIT LENGTH PROVIDE NO. 10 MINIMUM. AT 277 VOLTS AND OVER 200 FT CIRCUIT LENGTH PROVIDE NO. 10 MINIMUM.

C. CONTROL AND ALARM CABLING, EXCEPT AS NOTED, SHALL BE NO. 14 MINIMUM. AT 120 VOLTS INC OVER 200 FT CIRCUIT LENGTH, PROVIDE NO. 12 MINIMUM.

D. OTHER VOLTAGES AND PHASE: ADJUST CABLE SIZING AS REQUIRED TO MAINTAIN VOLTAGE DROP. INCREASE RACEWAY SIZES FOR LARGER WIRE AS REQUIRED.

E. INSULATION SHALL BE RUBBER AND THERMOPLASTIC MEETING ASTM AND IPCEA STANDARDS. TYPE THHN/THWN SHALL BE UTILIZED FOR FEEDERS AND BRANCH CIRCUITS EXCEPT AS NOTED. TYPE XHHW SHALL BE USED FOR SERVICE ENTRANCE FEEDERS AND ALL UNDERGROUND CONDUCTORS. TYPE SFF-2 SHALL BE UTILIZED FOR BRANCH CIRCUITS LOCATED IN WIRING CHANNELS OF CONTINUOUS FLUORESCENT FIXTURES AND IN AMBIENT TEMPERATURES OVER 90 DEG C

F. PRE MANUFACTURED METAL CLAD CABLE SHALL BE UTILIZED FOR ALL. NORMAL BRANCH CIRCUITS ONLY IN DRY HOLLOW STUD WALL LOCATIONS, ABOVE ACCESSIBLE CEILING AND WHERE PERMITTED BY ARTICLE 330 & 517 OF THE NATIONAL ELECTRICAL CODE. MINIMUM CONDUCTOR SIZE SHALL BE NO. 12 AWG COPPER WITH BARE BONDING CONDUCTOR IN DIRECT CONTACT WITH THE OUTER METAL JACKET.

G. THE INSULATION OF ALL CONDUCTORS SHALL BE 90C RATED THERMOPLASTIC WITH COLOR CODING AS FOLLOWS:

1) 208/120 VOLT SYSTEM:

a. BLACK FOR 'A' PHASE

b. RED FOR 'B' PHASE

c. BLUE FOR 'C' PHASE

2) 480/277 VOLT SYSTEM:

a. BROWN FOR 'A' PHASE

b. ORANGE FOR 'B' PHASE

c. YELLOW FOR 'C' PHASE

3) NEUTRAL WIRE SHALL UTILIZE WHITE OUTER COVERING THROUGHOUT. EQUIPMENT GROUND WIRE SHALL UTILIZE GREEN OUTER COVERING THROUGHOUT.

4) WHERE COLOR-CODED CABLE IS NOT AVAILABLE, CERTIFY IN WRITING AND REQUEST PERMISSION TO OVERLAP CONDUCTORS WITH 6 IN. OF COLOR TAPING IN ACCESSIBLE LOCATIONS.

H. PROVIDE FLAMEPROOF LINEN OR FIBER TAGS IN ACCESSIBLE LOCATIONS. FOR FEEDERS INDICATE FEEDER NUMBER, SIZE, PHASE, POINTS OF ORIGIN AND TERMINATIONS. FOR CONTROL AND ALARM WIRING, INDICATE TYPE (CONTROL OR ALARM), SIZE OF WIRE AND POINTS OF ORIGIN AND TERMINATIONS.

I. TERMINATIONS, SPLICES AND TAPS UNDER 600 VOLTS: COPPER CONDUCTORS NO.10 AND SMALLER SHALL UTILIZE COMPRESSION-TYPE OF TWIST-ON SPRING-LOADED CONNECTORS AND CLEAR NYLON-INSULATED COVERING. COPPER CONDUCTORS NO. 8 AND LARGER SHALL UTILIZE MECHANICAL BOLTED PRESSURE OR HYDRAULIC COMPRESSION TYPE USING MANUFACTURER'S RECOMMENDED TOOLING. CABLE LUGS AND CONNECTORS SHALL UTILIZE COMPRESSION TYPE OF SAME METAL AS CONDUCTOR. PROVIDE TO MATCH CABLE, WITH A MARKING INDICATING SIZE AND TYPE. COPPER LUG CONNECTIONS TO BUS BARS: USE ANTISEIZE COMPOUND ON TANG.

J. NOT MORE THAN 3 LIGHTING OR CONVENIENCE OUTLET CIRCUITS SHALL BE INSTALLED IN ONE CONDUIT UNLESS OTHERWISE INDICATED. PULL NO THERMOPLASTIC WIRES AT TEMPERATURES LOWER THAN 32 DEG F. PROVIDE SEPARATE RACEWAYS FOR CONDUCTORS OF 120/208 AND 277/480 VOLT SYSTEMS, EXCEPT 460 VOLT MOTOR BRANCH CIRCUIT WIRING AND RELATED 120 VOLT CONTROL WIRING. THERMOPLASTIC WIRES SHALL NOT BE INSTALLED IN COMPUTER AREA RAISED FLOORS.

K. LEAVE WIRES WITH SUFFICIENT SLACK TO PERMIT MAKING FINAL CONNECTIONS.

L. PERFORM CONTINUITY AND INSULATION TESTS. MEGGER TEST 100 PERCENT OF FEEDERS, 10 PERCENT OF BRANCH CIRCUITS AND ALL MOTOR BRANCH CIRCUITS OVER 25 HP.

M. PERFORM TESTS PRIOR TO CONNECTING EQUIPMENT AND IN PRESENCE OF AUTHORIZED REPRESENTATIVES. SUBMIT WRITTEN REPORT OF RESULTS. CORRECT OR REPLACE CABLE TESTING BELOW MANUFACTURER'S STANDARDS.

14. POWER WIRING:

A. PROVIDE ALL POWER WIRING TO ALL MOTORS AND EQUIPMENT FURNISHED UNDER ALL CONTRACTS ON THE PROJECT. INCLUDE EXTENSIONS FROM CONTROLLERS TO MOTORS AND MOTOR CONNECTIONS. MOUNT AND WIRE ALL CONTACTORS AND POWER DEVICES FURNISHED UNDER ALL CONTRACTS.

15. CONTROL WIRING:

B. PROVIDE ALL CONTROL WIRING LINE AND LOW VOLTAGE FOR MOTORS, ACTUATORS AND EQUIPMENT FURNISHED UNDER ALL CONTRACTS AND AS SPECIFICALLY SHOWN ON THE DRAWINGS, EXCEPT AS NOTED. THE ELECTRICAL CONTRACTOR SHALL COORDINATED WITH THE OTHER TRADES DURING THE BIDDING PROCESS AND INDICATION OF THIS COORDINATION SHALL BE STATED ON THE CONTRACTORS PROPOSAL. FAILURE TO COORDINATE WITH THE OTHER CONTRACTORS DURING THE BIDDING PROCESS WILL RESULT IN THE DENIAL OF EXTRA'S FOR PROVIDING ALL NECESSARY CONTROL WIRING.

C. CONTROL WIRING LESS THAN 120 VOLTS FOR MOTORS, ALARMS FOR EQUIPMENT FURNISHED UNDER MECHANICAL/PLUMBING WILL BE PROVIDED BY THE ELECTRICAL CONTRACTOR UNLESS COORDINATED WITH THE MECHANICAL AND PLUMBING CONTRACTOR DURING THE BIDDING PROCESS AND INDICATION OF THIS COORDINATION IS STATED ON THE CONTRACTORS PROPOSAL. FAILURE TO COORDINATE WITH THE MECHANICAL AND PLUMBING CONTRACTOR DURING THE BIDDING PROCESS WILL RESULT IN THE DENIAL OF EXTRA'S FOR PROVIDING ALL NECESSARY CONTROL WIRING.

16. DEVICES:

A. LOCAL SWITCHES:

1) CONVENTIONAL QUIET TOGGLE TYPE, RATED AT 20 AMP. 120/277 VOLT AC SIMILAR TO LEVITON 11221-2, 1223-2, 1224-2 OR EQUAL BY HUBBELL OR PASS & SEYMOUR. TOGGLE COLOR SHALL BE SELECTED BY THE OWNER OR ARCHITECT.

2) PILOT LIGHT TOGGLE TYPE WITH NEON LAMP, RATED AT 20 AMP, 120/277 VOLT AC SIMILAR TO LEVITON 11221-PLC.

B. INSERTION RECEPTACLES:

1) COMMERCIAL SPECIFICATION GRADE DUPLEX CONVENIENCE 125 VOLT. 2 POLE, 3 WIRE, 20 AMP WITH U GROUND SLOT GROUNDED, EXCEPT AS NOTED. DEVICE SHALL MEET OR EXCEED:

a. NEMA WD-1 AND WD-6

b. DEVICE SHALL BE SIMILAR TO HUBBELL 5362 OR EQUAL BY LEVITON, PASS & SEYMOUR OR GE. FACE COLOR SHALL BE SELECTED BY OWNER OR ARCHITECT. DEVICES USED ON EMERGENCY BRANCH CIRCUITS SHALL BE RED FACE ONLY.

2) 5MA GROUND FAULT INTERRUPTER WITH SELF-PROTECTION AND LED INDICATOR LIGHT, SIMILAR TO HUBBELL 5362-G OR EQUAL BY LEVITON AND PASS & SEYMOUR.

3) SPECIAL RECEPTACLES:

a. THE ELECTRICAL CONTRACTOR SHALL BE RESPONSIBLE TO PROVIDE SPECIAL RECEPTACLES REQUIRED TO MATCH PROVIDED, EXISTING AND NEW EQUIPMENT PLUGS. COORDINATE RECEPTACLE TYPE PRIOR TO INSTALLATION.

4) RECEPTACLE ORIENTATION:

a. CONTRACTOR SHALL COORDINATE ORIENTATION OF DEVICE WITH ARCHITECT.

C. DEVICE PLATES:

1) BRUSHED 302 STAINLESS STEEL. IF IT IS ASSOCIATED WITH AN EMERGENCY BRANCH CIRCUIT DEVICE THE PLATE SHALL BE ENGRAVED WITH THE CIRCUIT IDENTIFICATION FOR THAT DEVICE.

17. LUMINAIRES:

A. MANUFACTURE AND INSTALL LUMINAIRES IN ACCORDANCE WITH NEC ARTICLE 410.

B. PROVIDE ALL LUMINAIRES INDICATED, COMPLETE WITH LAMPS. INCLUDE ALL INTERIOR LUMINAIRES, AND ALL EXTERIOR FIXTURES MOUNTED ON THE BUILDING.

C. FURNISH ALL PLASTER FRAMES OR DRY WALL AND DELIVER TO PROJECT SITE FOR INSTALLATION UNDER FINISHES, COORDINATE WITH THE ARCHITECTURAL DRAWINGS.

D. USE FIXTURES CONFORMING TO UL STANDARDS, AND BEARING UL LABEL AND UNION LABEL WHERE A UNION LABEL IS REQUIRED.

E. ALL LED ELECTRONIC BALLASTS SHALL HAVE BUILT IN 0-10V DIMMING CAPABILITIES AND BE UL LISTED.

F. ALL FLUORESCENT ELECTRONIC BALLASTS SHALL MEET OR EXCEED THE REQUIREMENTS OF:

1) ANSI/IEEE C62.41 (AMERICAN NATIONAL STANDARDS INSTITUTE).

2) FCC PART 18 (RFI AND EMI).

3) CBM (CERTIFIED BALLAST MANUFACTURERS).

4) UL (UNDERWRITERS LABORATORIES).

5) PUBLIC LAW #100-357 (MINIMUM EFFICIENCY STANDARDS).

6) NAECA (NATIONAL APPLIANCE ENERGY CONSERVATION AMENDMENTS).

7) NEC (NATIONAL ELECTRIC CODE)

G. GENERAL CONSTRUCTION

PLASTICS: 100% VIRGIN ACRYLIC. REFER TO FIXTURE LIST FOR FURTHER DESCRIPTION.

METAL:

a. MATERIAL: STEEL, ALUMINUM OR OTHER TYPES MENTIONED.

b. B & S GAUGE: NO. 22 MINIMUM FOR HOUSINGS, WITH APPROPRIATE CROSS-SECTIONAL CONFIGURATION FOR FIXTURE HOUSING; THINNER SHEET METAL ACCEPTABLE FOR BALLAST ENCLOSURES AND INCIDENTAL PURPOSES.

FINISHES:

a. CORROSION PROTECTION: PLATING. BONDERIZING. PRIMING, ELECTROSTATIC PAINTING, OR OTHER APPROVED MEANS.

b. FINAL COATING: BAKED PAINT OR ENAMEL ON STEEL AND ALUMINUM; RAKED CLEAR LACQUER OR OTHER DURABLE TRANSPARENT FILM ON POLISHED METAL SURFACES.

H. EXTERIOR FIXTURES: ENCLOSED AND GASKETED. UNLESS OTHERWISE NOTED.

I. FLUORESCENT LAMP SOCKETS: WHITE FINISH, SILVER-PLATED CONTACT SURFACES.

J. LATCHES: QUICK-OPERATING TYPE WITHOUT NEED FOR TOOLS. UNLESS OTHERWISE NOTED; STAINLESS STEEL OR CADMIUM PLATED STEEL.

K. EXPOSED HARDWARE: NOT ACCEPTABLE ON VISIBLE SURFACES OF FIXTURES IN FINISHED AREAS UNLESS OTHERWISE NOTED.

L. OPERATING TEMPERATURE: NOT TO EXCEED 25 DEGREES C TEMPERATURE RISE OVER 40 DEGREES C A MAXIMUM 90 DEGREES C BALLAST HOT SPOT WHEN FLUORESCENT FIXTURE IS OPERATED IN 25 DEGREES C AMBIENT. MAXIMUM CASE TEMPERATURE SHALL NOT EXCEED 85 DEGREES C.

M. PROVIDE APPROPRIATE MOUNTING ACCESSORIES FOR EACH FIXTURE, COMPATIBLE WITH THE VARIOUS STRUCTURAL CONDITIONS THAT WILL BE ENCOUNTERED. PROVIDE FASTENING CLIPS (EARTHQUAKE CLIPS) AND AT LEAST TWO INDEPENDANT SUPPORT RODS OR WIRES FROM THE STRUCTURE TO A TAB ON THE LIGHTING FIXTURE. WIRE OR ROD SHALL HAVE A BREAKING STRENGTH OF THE WEIGHT OF THE FIXTURE AT A SAFETY FACTOR OF 3 FOR LUMINAIRES THAT ARE SUPPORTED FROM FRAMING MEMBERS OF SUSPENDED CEILINGS.

N. ASSEMBLE, WIRE AND INSTALL ALL LUMINAIRES AT THERE RESPECTIVE OUTLETS AS INDICATED AND ASSUME RESPONSIBILITY FOR THEIR CONDITION UNTIL ACCEPTANCE BY OWNER. INSTALL PROPER LAMPS IN EACH FIXTURE.

O. FIXTURE CONNECTIONS TO BRANCH CIRCUITS SHALL BE MADE USING STRANDED WIRE WITH INSULATION TEMPERATURE RATING EQUAL TO OR HIGHER THAN THAT OR WIRE SUPPLIED WITH THE FIXTURE OR SPECIFIED BY FIXTURE MANUFACTURER. FIXTURES ARE TO BE CONNECTED TO BRANCH CIRCUITS VIA JUNCTION BOX USING FLEXIBLE CONDUIT OF LENGTHS BETWEEN 4 FT MINIMUM AND 6 FT MAXIMUM.

P. THE USE OF FLEXIBLE CONDUIT. TO FIXTURES IN ANY LENGTH OVER 6FT IS PERMITTED ONLY WHEN A SEPARATE GROUND WIRE IS INSTALLED ALONG WITH THE CONDUCTORS INSIDE THE FLEXIBLE CONDUIT. IN THIS APPLICATION THE GROUND WIRE MUST BOND THE LIGHTING FIXTURE HOUSINGS TO EACH OTHER AND/OR TO THE JUNCTION BOX. ALL FLEXIBLE CONDUIT SHALL BE SUPPORTED AS REQUIRED BY NEC AND SHALL BE INSTALLED IN A WORKMANLIKE MANNER.

Q. NOTE THAT SPECIFICATIONS FOR RECESSED FIXTURES GENERALLY DO NOT INCLUDE MOUNTING ACCESSORIES. AND THAT EACH FIXTURE TYPE MAY BE USED IN SEVERAL DIFFERENT CEILINGS, SUCH AS LAY-IN EXPOSED GRID, CONCEALED SPUME TILE, OR DRYWALL. VERIFY MOUNTING DETAILS FOR EACH SPACE BEFORE ORDERING FIXTURES SO THAT PROPER QUANTITIES FOR EACH CONDITION WILL BE DELIVERED IN TIME TO AVOID CONSTRUCTION DELAYS.

R. SECURELY FASTEN LUMINAIRES TO FRAMING MEMBERS OF SUSPENDED CEILINGS WITH FASTENING CLIPS. AS SPECIFIED. CLIP EACH FIXTURE TO ALL ADJOINING FRAMING MEMBERS TO PREVENT MOVEMENT OF THE MEMBERS AWAY FROM THE FIXTURES.

S. SUPPORT EXIT SIGNS IN TILE CEILINGS WITH RAILS THAT SPAN BETWEEN RUNNERS OF CEILING SUSPENSION SYSTEM. USE FLANGED FIXTURES FOR FINISHED APPEARANCE.

T. SUPPORT FLUORESCENT FIXTURES IN DRYWALL CEILINGS FROM PLASTER FRAMES, WITH ADJUSTABLE LUGS ON 610E OF FIXTURE OR YOKE MOUNTING AS RECOMMENDED BY FIXTURE MANUFACTURER. USE FLANGED FIXTURES FOR FINISHED APPEARANCE, UNLESS OTHERWISE NOTED.

U. LOCATE FIXTURE IN CENTER OF PANEL WHERE USED IN MODULAR TILE CEILINGS, UNLESS OTHERWISE NOTED. REFER TO REFLECTED CEILING PLAN.

V. FLUORESCENT BALLASTS SHALL BE HIGH EFFICIENCY ELECTRONIC TYPE WITH A MAXIMUM 10% HARMONIC DISTORTION.

W. FLUORESCENT LAMPS SHALL HAVE A COLOR OF 4,100 KELVIN, UNLESS OTHERWISE NOTED.

X. HID(HIGH INTENSITY DISCHARGE) BALLASTS SHALL BE CONSTANT WATTAGE AUTO-TRANSFORMER TYPE.

Y. THE LUMINAIRES SHALL BE HUNG FROM THE TOP CORD OF THE STRUCTURE ABOVE. PROVIDE UNISTRUT STRATTALED AND SECURED TO THE TOP CORD OF THE STRUCTURE AS REQUIRED TO ENSURE THE LUMINAIRE HANGING DEVICE IS PERPENDICULAR TO THE FIXTURE AND THE ROOF OR FLOOR ABOVE.

18. EMPTY RACEWAY SYSTEMS:

A. A COMPLETE EMPTY RACEWAY SYSTEM CONSISTING OF BLANK 4-11/16IN. X 2-1/2IN. DEEP OUTLET BOXES WITH SINGLE OR DOUBLE GANG DRYWALL FINISH COLLAR AS NOTED. METALLIC RACEWAY WITH PULL STRING SHALL BE PROVIDED AND INSTALLED WHERE SHOWN FOR THE FOLLOWING SYSTEMS 1) TELEPHONE/DATA (SINGLE GANG) 2) CABLE TELEVISION (SINGLE GANG)

B. RACEWAY SIZE SHALL BE A MINIMUM OF 3/4IN. OR AS DOCUMENTED IN PLANS AND DETAILS.

C. ALL METALLIC RACEWAY SYSTEMS SHALL BE STUBBED UP AND TERMINATE IN ACCESSIBLE CEILING. END BUSHINGS AND PULL WIRES SHALL BE PROVIDED. BONDING OF ALL RACEWAY SYSTEMS TO PROVIDE A COMMON GROUND PATH SHALL BE PROVIDED.

D. ACTUAL DEVICES. CONNECTORS, WIRING COMPLETE WITH TERMINATIONS AND BOX COVERS SHALL BE PROVIDED BY THE OWNER.

19. FIRE STOPPING:

A. DRAWINGS AND GENERAL PROVISIONS OF CONTRACT. INCLUDING GENERAL AND SUPPLEMENTARY CONDITIONS AND DIVISION SPECIFICATION SECTIONS, APPLY TO WORK OF THIS SECTION.

B. PROVIDE ALL REQUIRED FIRE-STOPPING. WORK INCLUDES FIRE STOPPING PENETRATIONS OF FIRE-RESISTANCE RATED FLOORS, WALLS AND PARTITIONS IN NEW CONSTRUCTION, AS WELL AS PRE-EXISTING PENETRATIONS IN RENOVATION AREAS OF EXISTING CONSTRUCTION.

C. PRODUCT DATA. SUBMIT MANUFACTURER'S PRODUCT DATA FOR EACH FIRE-STOPPING PRODUCT REQUIRED, INCLUDING INSTRUCTIONS FOR SUBSTRATE PREPARATION AND FIRE-STOPPING INSTALLATION.

D. FIRE RESISTANT JOINT SEALERS: PROVIDE MANUFACTURER'S STANDARD FIRE-STOPPING SEALANT WITH ACCESSORY MATERIALS HAVING FIRE RESISTANCE RATINGS INDICATED AS ESTABLISHED BY TESTING IDENTICAL ASSEMBLIES BY UNDERWRITERS LABORATORY, OR OTHER TESTING AND INSPECTING AGENCY ACCEPTABLE TO AUTHORITIES HAVING JURISDICTION.

E. THE RATING OF THE FIRE SEALANT SHALL MEET OR EXCEED THE FIRE RATING OF THE FIRE RATED PARTITION.

20. TESTS:

A. BEFORE MAKING TESTS, COMPLETE ALL CONNECTIONS AT PANELS, FIXTURES AND OTHER EQUIPMENT. INSTALL FUSES AND HAVE ALL WIRING CONTINUOUS FROM SERVICE EQUIPMENT TO UTILIZATION OUTLETS. CORRECT ALL UNDESIRABLE GROUND. OPEN AND SHORT CIRCUIT CONDITIONS.

B. PROVIDE A SOURCE OF TEMPORARY POWER FOR MAKING TESTS IF NORMAL BUILDING POWER IS NOT AVAILABLE AT THE TIME.

C. TAKE AND RECORD THE FOLLOWING READINGS ON SYSTEMS 600 VOLTS AND BELOW:

1) MEGGER TESTS OF ALL FEEDER CIRCUIT CONDUCTORS, GROUND CONDUCTORS AND CONDUIT GROUND.

2) AMMETER READINGS ON ALL PHASES AND NEUTRAL OF EACH FEEDER TO INDICATE BALANCE.

3) AMMETER READINGS ON ALL PHASES OF EACH POLYPHASE MOTOR. INCLUDE NAMEPLATE FULL LOAD CURRENT OF EACH MOTOR ON DATA SHEET.

4) CERTIFY THAT ALL OVERLOAD DEVICES HAVE BEEN SET IN ACCORDANCE WITH DATA SHOWN ON THE DRAWINGS AND/OR MANUFACTURER'S RECOMMENDED SETTING.

D. SEND FINAL CERTIFIED TEST REPORTS AND CERTIFICATIONS TO THE ARCHITECT FOR APPROVAL AND TRANSMITTAL TO THE OWNER.

21. DEMONSTRATION OF COMPLETE ELECTRICAL SYSTEMS:

A. SUBMIT WRITTEN CERTIFICATION THAT ELECTRICAL SYSTEMS ARE COMPLETE AND OPERATIONAL. SUBMIT CERTIFICATION WITH CONTRACTOR'S REQUEST FOR FINAL REVIEW.

1) AT THE TIME OF FINAL REVIEW OF ELECTRICAL WORK, DEMONSTRATE THE OPERATION OF ELECTRICAL SYSTEMS. FURNISH LABOR, APPARATUS AND EQUIPMENT FOR SYSTEMS' DEMONSTRATION. THE VARIOUS TEST SHALL BE WITNESSED BY AND THE OWNER OR HIS REPRESENTATIVE.

B. THE CONTRACTOR SHALL FURNISH ALL TEST EQUIPMENT, MATERIALS, LABOR, AND TEMPORARY POWER HOOK-UPS TO PERFORM START-UP AND ALL TESTS AS REQUIRED TO OBTAIN FINAL FIELD ACCEPTANCE FROM OWNER. ALL TESTS SHALL BE CONDUCTED IN THE PRESENCE OF THE OWNER OR HIS REPRESENTATIVE. ALL TEST PROCEDURES SHALL CONFORM TO THIS SPECIFICATION AND APPLICABLE STANDARDS THE ANSI, IEEE. NEMA, OSHA, NEPA, ETC.

C. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL TESTS AND TEST RECORD. TESTING SHALL BE PERFORMED BY AND UNDER THE IMMEDIATE SUPERVISION OF THE CONTRACTOR. TEST RECORD SHALL BE KEPT FOR EACH PIECE OF EQUIPMENT. COPIES SHALL BE FURNISHED TO THE ENGINEER FOR REVIEW AND/OR APPROVAL.

D. A VISUAL INSPECTION OF ALL ELECTRICAL EQUIPMENT, TO CHECK FOR THE FOREIGN MATERIAL, TIGHTNESS OR WIRING AND CONNECTION. PROPER GROUNDING, MATCHING NAMEPLATE CHARTS WITH SPECIFICATION, ETC., SHALL BE MADE PRIOR TO ACTUAL TESTING.

E. A COMPLETE OPERATIONAL TEST SHALL BE MADE ON THE LIFE SAFETY FIRE ALARM SYSTEM. THIS COMPLETER OPERATIONAL TEST SHALL ALSO BE PROVIDED ON ANY EXISTING DEVICES AND SYSTEMS IF THIS IS A RENOVATION PROJECT. THE CONTRACTOR SHALL CONSULT WITH THE EQUIPMENT VENDORS AND THEN SUBMIT FOR APPROVAL A STEP-BY-STEP PROCEDURE DESCRIBING THE METHOD OF MAKING THE TESTS, THE EQUIPMENT TO BE UTILIZED AND THE FEATURE TO BE CHECKED BY THE TEST. ALL INTERLOCKS AND PROTECTIVE FEATURES SHALL BE CHECKED.

22. SPECIAL ENGINEERING SERVICES:

A. IN THE INSTANCE OF COMPLEX OR SPECIALIZED ELECTRICAL SYSTEMS SUCH AS EMERGENCY SYSTEM FIRE ALARM OR SIMILAR MISCELLANEOUS SYSTEMS. THE INSTALLATION, FINAL CONNECTIONS AND TESTING OF SUCH SYSTEMS SHALL BE MADE UNDER THE DIRECT SUPERVISION OF COMPETENT AUTHORIZED SERVICE ENGINEERS WHO SHALL BE IN THE EMPLOY OF THE RESPECTIVE EQUIPMENT MANUFACTURER.

B. ANY AND ALL EXPENSES INCURRED BY THE EQUIPMENT MANUFACTURERS' REPRESENTATIVES RELATED TO THIS PROJECT SHALL BE BORNE BY THE ELECTRICAL CONTRACTOR.

23. DESIGN MODIFICATIONS:

A. THE DRAWINGS SHOW ELECTRICAL SYSTEMS WHICH SUPPLY, CONTROL AND/OR MONITOR SYSTEMS SPECIFIED ELSEWHERE. THE ELECTRICAL SYSTEM SHOWN HAS BEEN BASED ON SPECIFIC MANUFACTURERS DATA OR INFORMATION CONVEYED TO THE ELECTRICAL DESIGNER. WHERE ANY AGREEMENT OR CHANGE IS MADE TO SUPPLY EQUIPMENT OF LARGER CAPACITY OR DIFFERENT ELECTRICAL CHARACTERISTICS. THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING THE ELECTRICAL SYSTEM TO EFFECT SUCH CHANGES WITHIN THE INTENT OF THESE SPECIFICATIONS AND TO INFORM THE ENGINEER, IN WRITING, OF SUCH CHANGE. FOR EXAMPLE. IF HVAC COMPRESSORS AND/OR MOTORS ARE ALLOWED TO BE CHANGED TO 230 VOLTS RATHER THAN THE ORIGINALLY SPECIFIED 208 VOLTS. BOOSTING OR BUCKING TRANSFORMERS SHALL BE SUPPLIED. INSTALLED, AND WIRED TO ACCOMMODATE THE CHANGE AT NO ADDITIONAL COST.

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01/23/2024

NJ PROFESSIONAL ENGINEER
NO. GE 45801

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		ISSUED FOR BIDDING	01/23/2024

revisions

CAPE MAY BOARDWALK BATHROOMS

702 BEACH AVENUE

CAPE MAY, NJ

project title

ELECTRICAL SPECIFICATIONS

drawing name

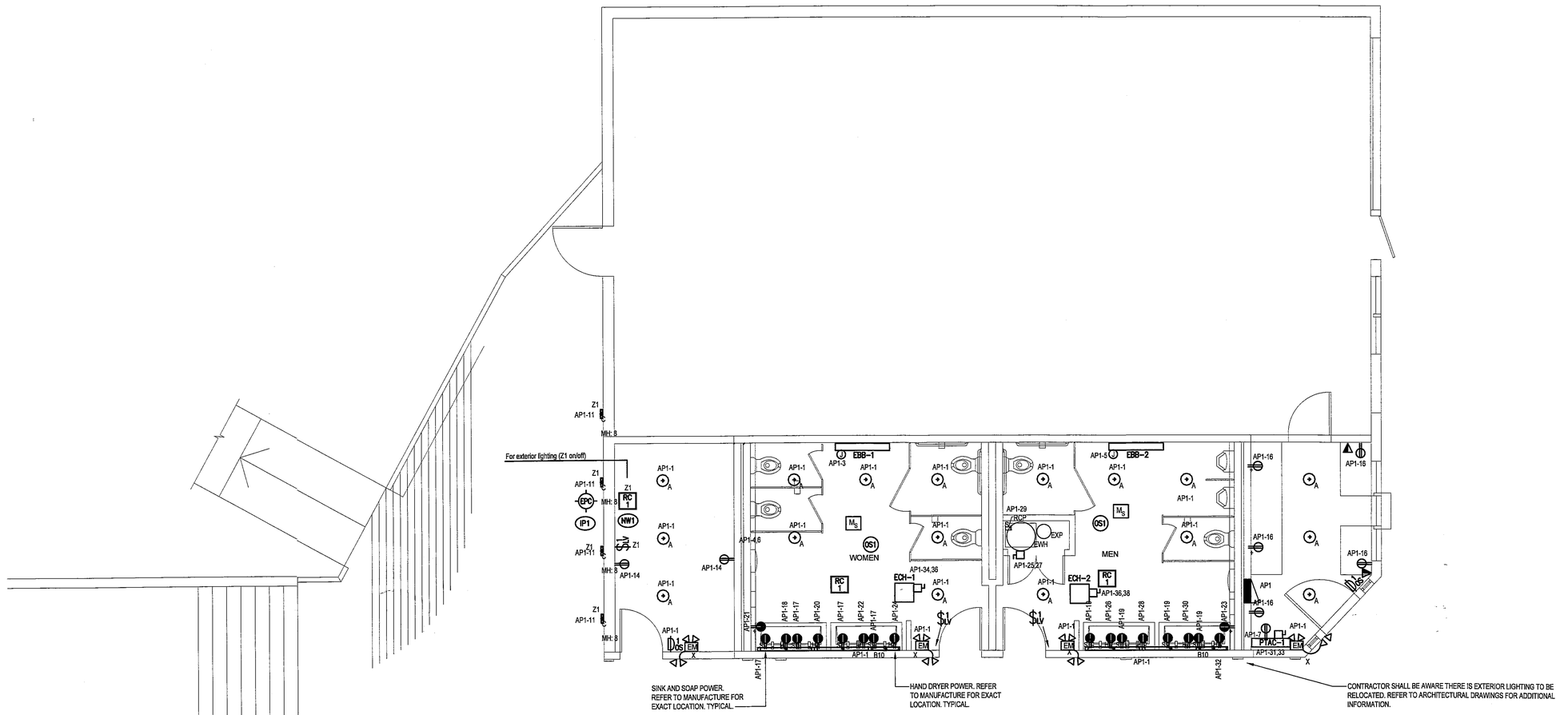
scale AS NOTED

date 01/23/24

drawn by AW

project no. 220121

drawing no. E1.3



FLOOR PLAN

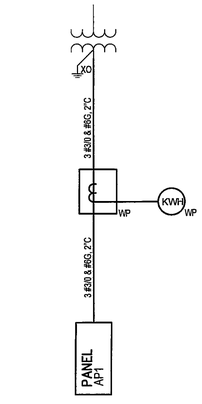
SCALE: 1/4" = 1' 0"

Luminaire Schedule			
Label	Description	Luminaire Lumens	Luminaire Watts
A	PiL Bliz Round 30 071435 AN-96 830	2178	30
C	PIL MIMIK 20 M20-M-15-T2-FINISH-80-3K-UNV0-10V-ACCESSORIES	1385	15
B10	FOCAL POINT SEEM 2 WALL MTD FSM2LW-FL-375LF-30K-1C-UNV-LD1-WM-OPTIONS-FINISH-10'		35
X	PROVIDE LED EMERGENCY LIGHTING WITH MINIMUM 90 MINUTE BATTERY BACKUP AND REMOTE WEATHERPROOF HEADS		5

FOR THE AVAILABLE FAULT CURRENT CALCULATIONS WE HAVE ASSUMED A 45kVA UTILITY TRANSFORMER WITH INFINITE AVAILABLE FAULT CURRENT (AFC)

Z = 3%
AFC = 9,375

THE CONTRACTOR SHALL COORDINATE THE FINAL AVAILABLE FAULT CURRENT WITH THE UTILITY COMPANY PRIOR TO ORDERING EQUIPMENT. ONCE THE AVAILABLE FAULT CURRENT IS KNOWN THE CONTRACTOR SHALL CONTACT THE ENGINEER. THE ENGINEER WILL PROVIDE THE CALCULATED AVAILABLE FAULT CURRENT FOR ALL OF THE ELECTRICAL EQUIPMENT AND INFORM THE ELECTRICIAN THE AVAILABLE FAULT CURRENT AND THE DATE THE FAULT CURRENT WAS CALCULATED. THIS INFORMATION WILL BE PLACED ON A WATERPROOF PERMANENT ENGRAVED PLACARD THAT WILL BE PLACED ON THE SERVICE EQUIPMENT.



SINGLE LINE DIAGRAM

SCALE: NONE

GENERAL NOTES:

1. UNLESS OTHERWISE NOTED, ALL CIRCUIT BREAKERS AND/OR FUSED/SWITCHES SHOWN ARE 3 POLE TYPE.
2. UNLESS OTHERWISE NOTED, THE AVAILABLE FAULT CURRENT (AFC) SHOWN IS THE MINIMUM RATING FOR THAT EQUIPMENT. THE CONTRACTOR SHALL ENSURE THE FAULT CURRENT RATING OF THE EQUIPMENT PROVIDED IS EQUAL OR GREATER THAN THE AVAILABLE FAULT CURRENT (AFC).
3. THE CONTRACTOR SHALL ASSUME FOR MULTI-SECTION PANELS THERE WILL BE FEED-THROUGH LUGS FROM ONE SECTION TO THE OTHER SECTION AND CONNECTED WITH A FEEDER THE SAME SIZE AS THE FEEDER CONDUCTORS AND CONDUIT(S) FROM THE UPSTREAM OVER CURRENT PROTECTION DEVICE.
4. UNLESS OTHERWISE NOTED, ALL CONDUCTOR SIZES SHOWN ARE COPPER TYPE.
5. UNLESS OTHERWISE NOTED ALL ELECTRICAL PANELS WILL BE REQUIRED TO HAVE SURGE PROTECTION. REFER TO COVER SHEET FOR ADDITIONAL INFORMATION.
6. FOR ANY ELECTRICAL DEVICES TO BE RELOCATED OR FOR EXISTING CIRCUITS TO BE REUSED OR EXTENDED THE CONTRACTOR SHALL EXTEND THESE EXISTING CIRCUITS AS REQUIRED. THE CONTRACTOR SHALL MATCH THE EXISTING CONDUCTORS AND CONDUIT TYPE AND SIZES.
7. CONTRACTOR SHALL MAKE SURE ALL ELECTRICAL DEVICES ARE LOCATED HIGHER THAN 24" ABOVE THE FINISHED FLOOR. FLOOR ELEVATION IS 10 NAVD 1988 AND FLOOD ELEVATION IS 12'-0"

PANEL: AP1 — MAIN CIRCUIT BREAKER 200 AMPS
SECTION: 1 OF 1 — AVAILABLE FAULT CURRENT 10,000 AFC
VOLTS: 120/240v, 1P, 3W — NO. OF POLES 40 P
SIZE: 200 AMPS BUSS

CKT. NO.	NO. OF COND.	SIZE OF COND.	GROUND COND.	DESCRIPTION	C/B SIZE	No. POLES	LOAD (VA)	PHASE A	PHASE B	LOAD (VA)	No. POLES	C/B SIZE	DESCRIPTION	NO. OF COND.	SIZE OF COND.	GROUND COND.	CKT. NO.
1	2	12	12	LIGHTING	20	1	630	630	-		1	20	SPARE				2
3	2	12	12	EBB-1	20	1	756	-	756		1	20	SPARE				4
5	2	12	12	EBB-2	20	1	756	756	-		1	20	SPARE				6
7	2	12	12	CONDENSATE PUMP	20	1	180	-	180		1	20	SPARE				8
9	2	12	12	EF-1	15	1	348	348	-		1	20	SPARE				10
11	2	12	12	LIGHTING EXTERIOR	20	1	160	-	160		1	20	SPARE				12
13				SPARE	20	1		360	-	360	1	20	REC-KITCHEN	2	12	12	14
15	2	12	12	REC-ROOFTOP	20	1	180	-	1080	900	1	20	REC-TICKET AREA	2	12	12	16
17	2	12	12	SINK POWER WOMENS	20	1	720	2220	-	1500	1	20	HAND DRYER	2	12	12	18
19	2	12	12	SINK POWER MENS	20	1	720	-	2220	1500	1	20	HAND DRYER	2	12	12	20
21	2	12	12	REC-BATHROOM	20	1	180	1680	-	1500	1	20	HAND DRYER	2	12	12	22
23	2	12	12	REC-BATHROOM	20	1	180	-	1680	1500	1	20	HAND DRYER	2	12	12	24
25	2	10	10	EWH	25	2	2000	3500	-	1500	1	20	HAND DRYER	2	12	12	26
27							2000	-	3500	1500	1	20	HAND DRYER	2	12	12	28
29	2	12	12	RCP	20	1	44	1544	-	1500	1	20	HAND DRYER	2	12	12	30
31	2	12	12	PTAC	15	2	948	-	2448	1500	1	20	HAND DRYER	2	12	12	32
33							948	2844	-	1896	2	20	ECH-1	2	12	12	34
35				SPARE	20	1		-	1896	1896							36
37				SPARE	20	1		1896	-	1896	2	20	ECH-2	2	12	12	38
39				SPARE	20	1		-	1896	1896							40
						PHASE TOTAL (VA)		15778	15816	NOTES:							
MOUNTING: RECESSED						PHASE TOTAL (AMPS)		131	132								
						TOTAL KVA		32	KVA								
						TOTAL AMPS		132	AMPS								
						VOLTAGE		240	V								

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revisions

CAPE MAY BOARDWALK BATHROOMS

702 BEACH AVENUE

CAPE MAY, NJ

project title

ELECTRICAL FLOOR PLAN

drawing name

scale AS NOTED

date 01/23/24

drawn by AW

project no. 220121

drawing no. E2.1

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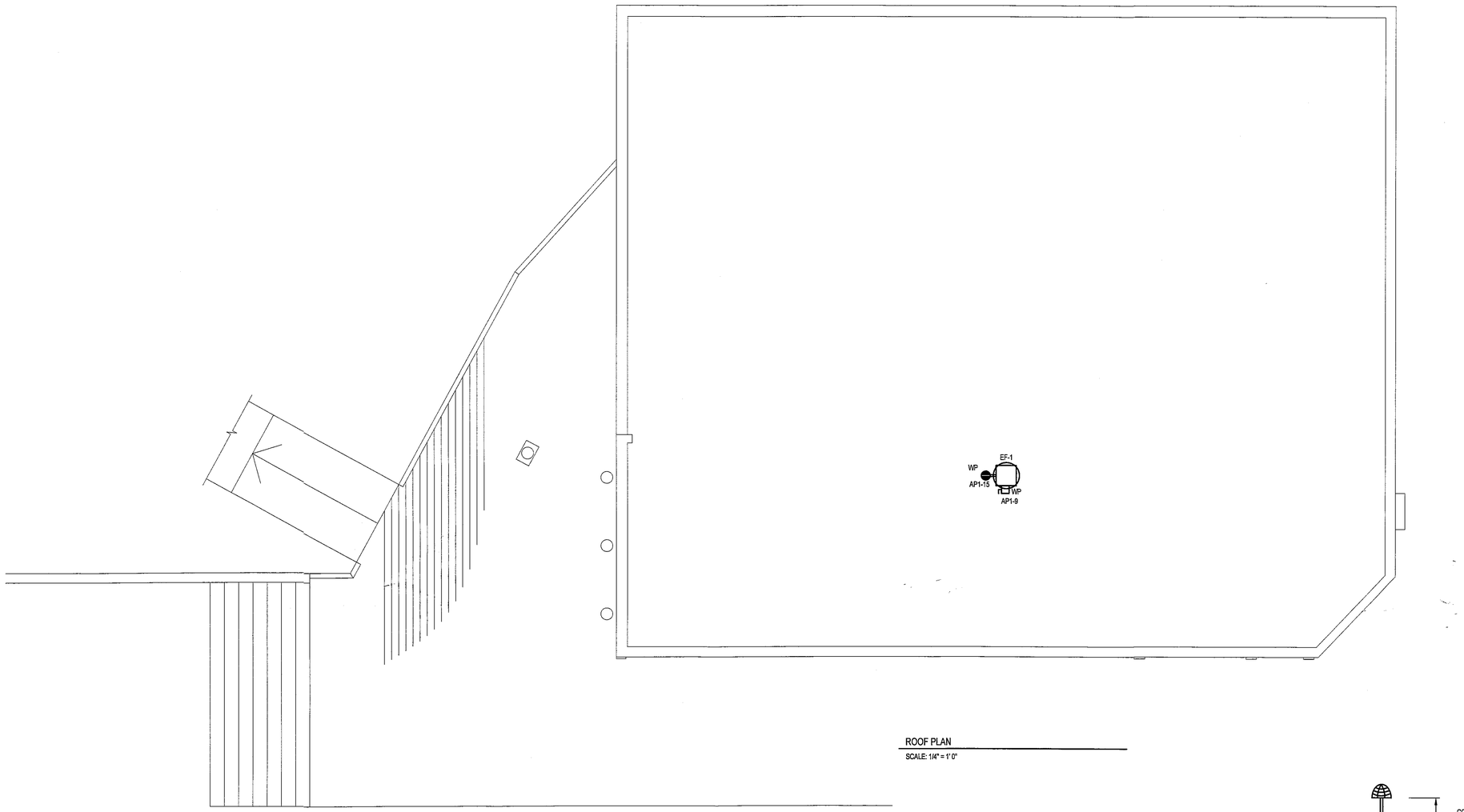
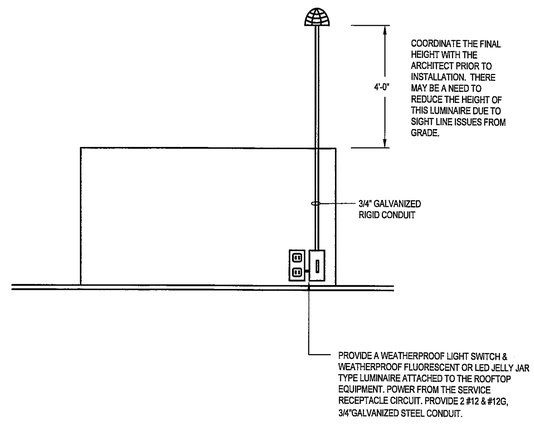


ROOF PLAN
SCALE: 1/4" = 1'0"



ROOFTOP EQUIPMENT SERVICE LUMINAIRE
SCALE: NONE

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CAPE MAY BOARDWALK BATHROOMS

702 BEACH AVENUE

CAPE MAY, NJ

project title

ELECTRICAL ROOF PLAN

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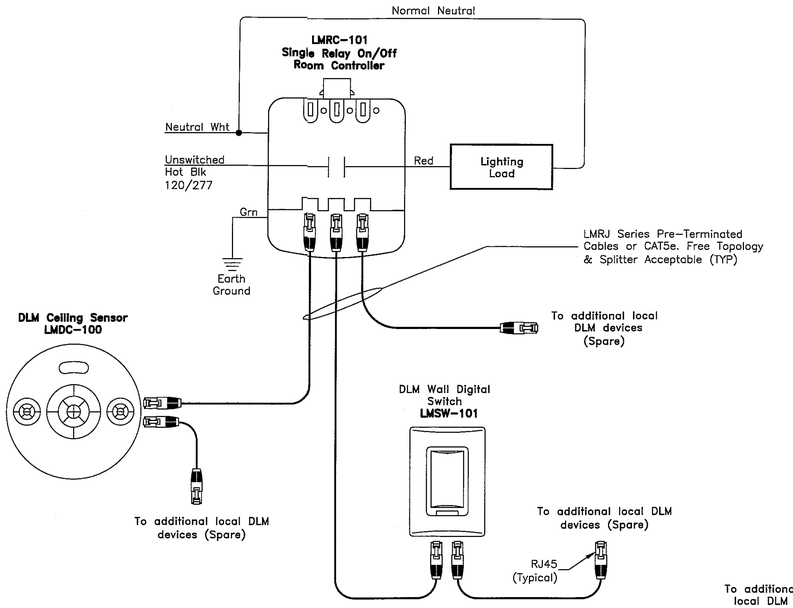
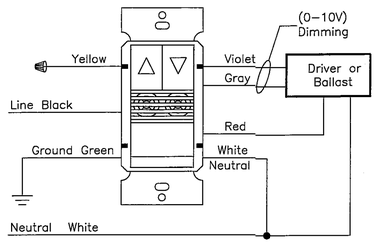


TYP. BATHROOM (LMRC-101) WIRING DIAGRAM

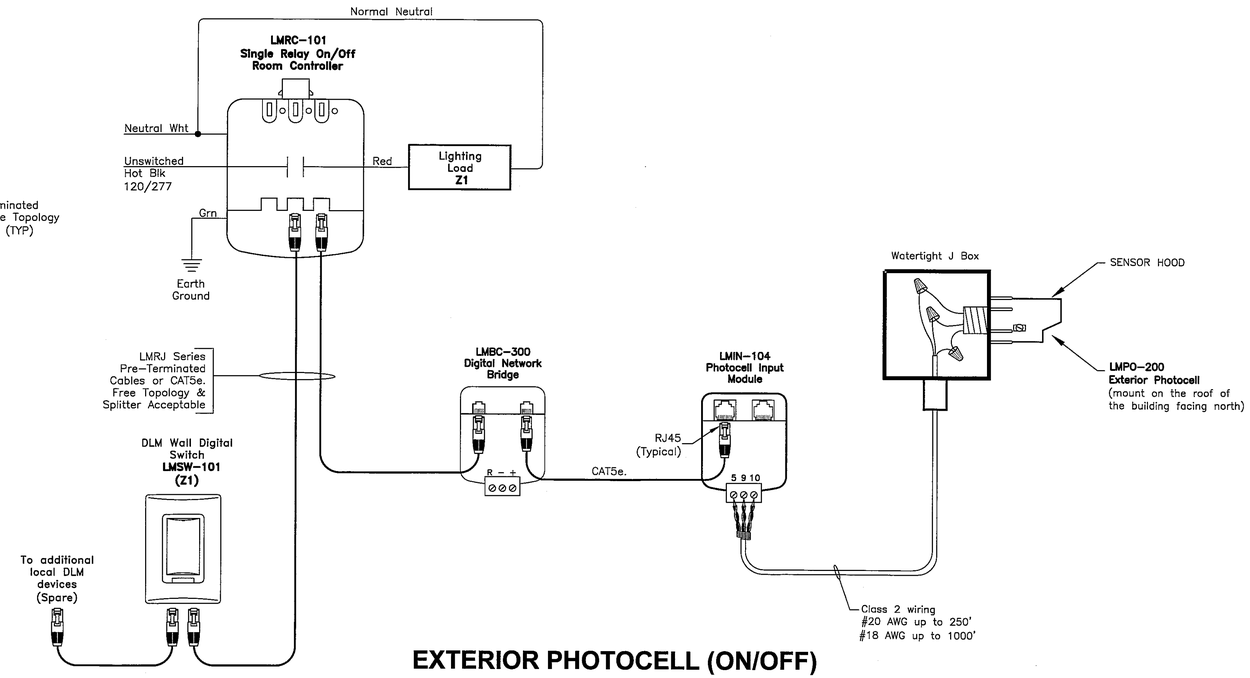
NOTE: Refer to controls layout for exact quantity and model number of devices.

SCALE:– NTS



DW-311 WIRING DIAGRAM

SCALE:– NTS



EXTERIOR PHOTOCELL (ON/OFF) WIRING DIAGRAM

NOTE: Refer to controls layout for exact quantity and model number of devices.

SCALE:– NTS

LIGHTING CONTROL LEGEND
LEGRAND WATTSTOPPER

RS1	LMRC-101	120/277 VAC	1-relay On/Off Room Controller
OS1	LMDC-100	24VDC, 20mA	Dual Technology Ceiling Sensor
SW1	LMSW-101	24VDC, 5mA	1-button Digital Wall Switch
DW	DW-311	120/277 VAC	2-Button Dual Tech 0-10V Dim With Switch Occ Sensor
NW1	LMBC-300	24VDC, 30mA	Network Bridge
IP1	LMIN-104	24VDC, 20mA	Input Module
EPC	LMPO-200	24VDC	Analog Exterior Photocells

THESE DETAILS ARE PROVIDED FOR DIAGRAMMATIC PURPOSES ONLY. REFER TO THE MANUFACTURERS SHOP DRAWINGS, DETAILS AND INSTALLATION INSTRUCTIONS FOR FINAL REQUIREMENTS.

LIGHTING CONTROL NOTES

1. All sensor locations are approximate. Refer to the Manufacture's installation instructions prior to installation.
2. If any questions arise regarding sensor placement, contact SLS Lighting and Controls prior to installation to schedule a field visit.
3. If pendant mounted fixtures are present, location and coverage of sensors should be reviewed.
4. All corner mount sensors located in rooms with recessed fixtures should be mounted on ceiling instead of the wall. Please review installation diagram for instructions.
5. Ceiling mounted sensors require to be located no closer than 6-8' from air supply/return registers.
6. Maximum number of sensors that can be wired in parallel to a single room controller or power pack, depends on sensor model (see individual sheets for mA consumption).
7. Contractor is responsible for field verification of required number of power packs (if apply).
8. One power pack is required for each circuit that is to be controlled.
9. Power packs and/or DLM Room Controllers are shown for zoning purposes only. Contractor is responsible for determining actual location and circuiting.
10. Power packs (if apply) should be mounted at least 6-12 inches from any sensor.
11. Locations of photocells (if shown) are diagrammatic and for quantitative purposes only. Actual mounting locations of photocells should be determined in an onsite pre-installation meeting prior to roughing in equipment.
12. Per the requirements of the electrical code, areas labeled as "mechanical" or "electrical" where work may occur are not to be controlled by automated lighting controls alone.
13. Turn off any power at the circuit breaker before wiring any product.
14. Free-topology DLM local network segments may include digital load controllers, switches and sensors; Cat 5e cable, 150' per device to 1,000' max, per each local network.

DESIGN BASED ON ASHRAE 90.1-2019

STAND ALONE ROOM - SEQUENCE OF OPERATION

TICKETING COUNTER / KITCHENETTE.
Manual-on/auto-off operation through 0-10V dimming wall/sensor switch.

TYP. MULTI-STALL RESTROOMS.
Auto-on/auto-off operation through ceiling sensor, room controller. Digital switch for local control.

EXTERIOR LIGHTING (Z1)
Exterior wall lighting indicated with Z1 shall be on/off dusk to dawn via the exterior photocell.
(Refer layout/details for additional device type)

NOTES

GENERAL NOTES

All occupancy/vacancy sensors shall turn off respective lighting fixtures 20 min after vacancy.

Afterhour override control shall have a maximum override of no more than two hours per activation during scheduled off periods.

Confirm the exact dimming requirements of each purchased lighting fixture, prior to ordering the corresponding dimming room controller. Compatibility must be verified.

Lower case letter (example "a") located next to lighting fixture indicates the local switch zone.

All engraving of switches shall be coordinated with the owner prior to ordering.

EMERGENCY NOTES

All fixtures indicated with "EM" shall have an integral emergency battery and be internally wired to bypass local control, bringing fixture to full brightness during emergency operation.

PLEASE CONTACT SLS CONTROLS WITH ANY QUESTIONS OR REVISIONS:

RON LEWERT - ron@slsltg.com
Cell Phone: 732-815-6931

DICKSON FERNANDES - dickson@slsltg.com
Cell Phone: 732-740-2294

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revisions

CAPE MAY
BOARDWALK BATHROOMS
702 BEACH AVENUE
CAPE MAY, NJ

project title
LIGHTING CONTROL DETAILS

drawing name

scale AS NOTED
date 01/23/24
drawn by AW
project no. 220121

drawing no. E3.1

1/23/2024 10:01 AM

1. THESE GENERAL NOTES, SYMBOL LIST AND DETAILS ARE APPLICABLE TO ALL HVAC/MECHANICAL DRAWINGS.

2. DRAWINGS ARE DIAGRAMMATIC. DETERMINE LOCATIONS OF SYSTEMS AND COMPONENTS IN FIELD. RELOCATE EXISTING WORK THAT INTERFERES WITH WORK OF THIS CONTRACT.

3. WORK IN THIS SECTION IS SPECIFIED ON THE SPECIFICATION SHEET

4. COORDINATE THIS WORK WITH THAT OF OTHER TRADES.

5. DIMENSIONS SHOWN ON PLAN ARE HORIZONTAL. DIMENSIONS SHOWN IN ELEVATION ARE VERTICAL EXCEPT IN WAY OF STRUCTURAL STEEL, DIMENSIONS ARE MEASURED PERPENDICULAR TO FLANGE.

6. NEITHER ACCURACY NOR COMPLETION OF SERVICES AND UTILITY LOCATIONS SHOWN ON DRAWINGS IS GUARANTEED. DETERMINE EXACT LOCATIONS OF EXISTING SERVICES AND UTILITIES IN FIELD, WHETHER OR NOT SHOWN ON DRAWINGS. EXERCISE CAUTION AND IDENTIFY LOCATIONS OF UNMARKED UTILITY LINES AS NECESSARY TO PERFORM WORK OF THIS SECTION.

7. MANUFACTURERS MODEL NUMBERS ARE SPECIFIED SOLELY TO ESTABLISH STANDARDS OF QUALITY FOR PERFORMANCE AND MATERIALS.

8. PRODUCT INSTALLATION SHALL ADHERE TO MANUFACTURERS RECOMMENDATIONS.

9. PROVIDE HANGERS, INSERTS, ANCHORS, SUPPLEMENTAL STEEL & SUPPORTS AS REQUIRED TO SUPPORT DUCTWORK, PIPING AND EQUIPMENT FROM STRUCTURE.

10. SCHEDULE WORK OF THIS SECTION TO AVOID INTERFERING WITH EXISTING OPERATIONS IN THE FACILITY.

11. COORDINATE ROOF PENETRATIONS WITH WORK OF OTHER SECTIONS AND WITH FLASHING REQUIREMENTS. MECHANICAL CONTRACTOR TO NOTIFY OWNER PRIOR TO STARTING WORK TO VERIFY COMPLIANCE WITH BOND AND WARRANTY OF EXISTING ROOF.

12. RUN DUCTS AND PIPING CONCEALED AND CLEAR OF CEILING INSERTS, UNLESS OTHERWISE SPECIFIED.

13. INSTALL THERMOSTATS 4' ABOVE FINISHED FLOOR OR AS DIRECTED OTHERWISE BY ARCHITECT.

14. STRUCTURAL WELDING SHALL BE CONTINUOUS 1/4" FILLET UNLESS REQUIRED OTHERWISE.

15. ALL NEW PIPING SHALL BE CONCEALED IN CEILING, WALL CAVITIES AND/OR UNDER SLAB, UNLESS OTHERWISE NOTED. EXISTING PIPING TO REMAIN BUT EXPOSED AS A RESULT OF DEMOLITION OPERATIONS SHALL BE RE-ROUTED/MODIFIED FOR CONCEALMENT IN CEILING OR WALL CAVITIES, OR UNDER SLAB, AT NO ADDITIONAL COST TO THE OWNER.

16. CONNECT NEW WORK TO EXISTING WORK IN A NEAT AND ACCEPTABLE MANNER. RESTORE EXISTING DISTURBED WORK TO ITS ORIGINAL CONDITION, INCLUDING MAINTENANCE OF WIRING CONTINUITY AS REQUIRED.

17. CONNECT NEW WORK TO EXISTING WORK WITH MINIMUM INTERFERENCE TO EXISTING FACILITIES. TEMPORARY SHUTDOWNS ARE PERMISSIBLE ONLY WITH WRITTEN CONSENT OF THE OWNER. ALARM AND EMERGENCY SYSTEMS ARE NOT TO BE INTERRUPTED.

18. FIRESTOPPING SHALL BE INSTALLED WHENEVER PIPING CROSSES FIRE RATED PARTITIONS. FIRE DAMPERS SHALL BE INSTALLED WHENEVER DUCTWORK CROSSES A FIRE RATED PARTITION. REFER TO THE ARCHITECTURAL PLANS FOR FIRE RATED PARTITION LOCATIONS. THE FIRESTOPPING SHALL MATCH OR EXCEED THE FIRE RATING OF THE PARTITION PENETRATED. ALL FIRESTOPPING SHALL BE A UL LISTED ASSEMBLY.

19. THE CONTRACTOR SHALL BRING ANY CONFLICTS IN THE DRAWINGS TO THE ATTENTION OF THE ENGINEER DURING THE BIDDING PROCESS. IF NOT BROUGHT UP TO THE ENGINEER DURING THE BIDDING PROCESS THE MORE EXPENSIVE OPTION SHALL BE CHOSEN FOR BIDDING PURPOSES.

20. HVAC CONTRACTOR IS RESPONSIBLE TO PROVIDE ACCESS PANELS FOR ANY CONCEALED HVAC WORK THAT MUST BE ACCESSIBLE EITHER BY CODE OR AS INDICATED IN THE DOCUMENTS. ALL ACCESS DOOR LOCATIONS SHALL BE REVIEWED AND APPROVED BY ARCHITECT PRIOR TO INSTALLATION OF DEVICE REQUIRING THE ACCESS PANEL. ALL ACCESS DOORS MUST MATCH THE FIRE RATING AND CONSTRUCTION TYPE OF THE CEILING OR WALL PENETRATION AS DESIGNATED ON THE ARCHITECTURAL DRAWINGS.

AIR SYSTEMS

21. REFER TO THE ARCHITECTURAL REFLECTED CEILING PLANS FOR EXACT LOCATIONS OF AIR DEVICES.

22. INTERNAL AIRFLOW DIMENSIONS ARE SHOWN FOR DUCTS. INCREASE DUCT SIZE AS NECESSARY TO MAINTAIN FREE FLOW AREA INDICATED.

23. USE FLAT TRANSVERSE SEAM FOR DUCTWORK WHERE SPACE AVAILABLE DICTATES.

24. DIFFUSER SIZES SHOWN ARE NECK SIZES. REGISTERS AND GRILLE SIZES ARE NOMINAL.

25. PROVIDE VOLUME DAMPERS OR OTHER APPROVED BALANCING DEVICES AT DUCT BRANCHES AND RUN OUTS, AND AT REGISTER GRILLE AND DIFFUSER NECKS IN SUPPLY, RETURN AND EXHAUST DUCTWORK, WHETHER SHOWN OR NOT.

26. DUCTWORK DOWNSTREAM OF ALL AC UNITS SHALL BE ACOUSTICALLY LINED WITH 1" ACOUSTICAL LINING FOR A MINIMUM OF 15 FEET.

27. PROVIDE CLEARANCE IN FRONT OF ALL ELECTRIC CONTROL PANELS PER N.E.C. AND MFG. REQUIREMENTS.

CONSUMABLES

28. THE CONTRACTOR SHALL REPLACE ALL CONSUMABLE EQUIPMENT ON THIS PROJECT AFTER FINAL TESTING AND RIGHT BEFORE THE EQUIPMENT IS TURNED OVER TO THE OWNER. THIS INCLUDES BUT IS NOT LIMITED TO ALL WATER AND AIR FILTERS ON THE PROJECT.

CODE COMPLIANCE

29. ALL WORK PERFORMED MUST MEET ALL APPLICABLE CODES AS REQUIRED BY THE AUTHORITY HAVING JURISDICTION.

GENERAL NOTES

AAV	AUTOMATIC AIR VENT	EXH	EXHAUST	PSI	POUNDS PER SQUARE INCH
AC	AIR CONDITIONING	°F	DEGREES FAHRENHEIT	PSIA	PSI ABSOLUTE
ACU	AIR CONDITIONING UNIT	FA	FREE AREA (SQ.FT.)	PSIG	PSI GAUGE
AD	ACCESS DOOR	FAI	FRESH AIR INTAKE	RA	RETURN AIR
AFF	ABOVE FINISHED FLOOR	FC	FLEXIBLE CONNECTION	RE	EXISTING TO BE REMOVED
AHU	AIR HANDLING UNIT	FD	FIRE DAMPER	REX	EXISTING TO BE RELOCATED
BG	BOTTOM GRILLE	FIN FL	FINISHED FLOOR	RE	REMOVE EXISTING
BFC	BELOW FINISHED CEILING	FLA	FULL LOAD AMPERES	RF	RETURN FAN
BHP	BRAKE HORSEPOWER	FPM	FEET PER MINUTE	RG	RETURN GRILLE
BR	BOTTOM REGISTER	GAL	GALLON	RH	RELATIVE HUMIDITY
BT	BOTTOM THROAT	GPH	GALLONS PER HOUR	RHC	REHEAT COIL
BTU	BRITISH THERMAL UNIT	GPM	GALLONS PER MINUTE	RLA	RUNNING LOAD AMPS
BTUH	BTU PER HOUR	HT	HEIGHT	RPM	REVOLUTIONS PER MINUTE
CD	CEILING DIFFUSER	HR	HOUR	(RRO)	EXISTING TO BE REMOVED AND RETURN TO OWNER
CFM	CUBIC FEET PER MINUTE	HV	HEATING AND VENTILATING	SA	SUPPLY AIR
CG	CEILING GRILLE	HX	HEAT EXCHANGER	SD	SMOKE DAMPER
CLG	CEILING	HZ	FREQUENCY	SF	SUPPLY FAN
COND	CONDENSATE	IN	INCH OR INCHES	SP	STATIC PRESSURE
CR	CEILING REGISTER	LAT	LEAVING AIR TEMPERATURE	SPEC	SPECIFICATION
CUH	CABINET UNIT HEATER	LD	LINEAR DIFFUSER	TDH	TOTAL DYNAMIC HEAD
CV	CONSTANT VOLUME	LF	LINEAR FEET	TEMP	TEMPERATURE
DB	DRY BULB	LWB	LEAVING WET BULB TEMPERATURE	TG	TOP GRILLE
DIAM	DIAMETER	LWT	LEAVING WATER TEMPERATURE	TYP	TYPICAL
DMPR	DAMPER	MBH	THOUSAND BTU PER HOUR	TR	TOP REGISTER
DX	DIRECT EXPANSION	MER	MECHANICAL EQUIPMENT ROOM	UH	UNIT HEATER
EG	EXHAUST GRILLE	MIN	MINIMUM	VFD	VARIABLE FREQUENCY DRIVE
EX	EXISTING TO REMAIN	NC, N.C.	NORMALLY CLOSED	VAV	VARIABLE AIR VOLUME UNIT
EAT	ENTERING AIR TEMPERATURE	NIC	NOT IN CONTRACT	VIV	VARIABLE INLET VANES
EDB	ENTERING DRY BULB TEMPERATURE	NO, N.O.	NORMALLY OPEN	W	WIDTH
EF	EXHAUST FAN	NTS, N.T.S.	NOT TO SCALE	w/	WITH
EL	ELEVATION	NO.	NUMBER	WB	WET BULB
EWB	ENTERING WET BULB	OA	OUTSIDE AIR	WMS	WIRE MESH SCREEN
EWT	ENTERING WATER TEMPERATURE	OAI	OUTSIDE AIR INTAKE		
		OED	OPEN END DUCT		

HVAC ABBREVIATIONS

SYMBOL	DESCRIPTION
	SINGLE LINE DUCTWORK OR EQUIPMENT - NEW
	SINGLE LINE DUCTWORK OR EQUIPMENT - EXISTING
	DUCTWORK TO BE REMOVED
	DUCTWORK WITH ACOUSTIC LINING
	DUCT UNDER POSITIVE PRESSURE (SUPPLY AIR OR FAN DISCHARGE)
	DUCT UNDER NEGATIVE PRESSURE (RETURN, EXHAUST OR OUTSIDE AIR)
VD	VOLUME DAMPER - THE "VD" MAY NOT BE SHOWN ON THE PLANS.
BDD	BACK DRAFT DAMPER
M	MOTORIZED DAMPER
R	RISE IN DUCTWORK (IN DIRECTION OF AIR FLOW)
D	DROP IN DUCTWORK (IN DIRECTION OF AIR FLOW)
§ OR CFM	CUBIC FEET PER MINUTE
Ø	DIAMETER
⌀	SQUARE FEET
	POINT OF CONNECTION
	POINT OF DISCONNECTION
(D) DD	DUCT SMOKE DETECTOR
	AIR FLOW ARROW
	AIR FLOW
L	DOOR LOUVER L
L	DOOR LOUVER R
CD-X X" Ø NECK XXX CFM	SUPPLY DIFFUSER
RG-X -or- EG-X X" Ø NECK XXX CFM	RETURN -OR- EXHAUST GRILLE
	SUPPLY DIFFUSER WITH BLANKING PLATE
	LINEAR DIFFUSER -OR- LINEAR RETURN
	SIDE WALL -OR- DUCT MOUNTED DIFFUSER
	FLEXIBLE DUCT
	FLEXIBLE DUCT CONNECTION
	VERTICAL DUCT DROP (IN DIRECTION OF AIRFLOW)
	VERTICAL DUCT RISE (IN DIRECTION OF AIRFLOW)
T	THERMOSTAT
	UNIT HEATER
	ROOFTOP EXHAUST FAN
XXX X	EQUIPMENT IDENTIFICATION TAG
RTU-X	ASSOCIATED EQUIPMENT TAG I.E.: THERMOSTAT ASSOCIATED WITH RTU-X
X	DRAWING NOTE - 'X' DENOTES NOTE NUMBER SHOWN ON PLAN
X	KEY NOTE - 'X' DENOTES NOTE NUMBER SHOWN FOR ALL HVAC PLANS.
X	DEMOLITION NOTE - 'X' DENOTES NOTE NUMBER SHOWN ON PLAN

SYMBOL LEGENDS AND ABBREVIATIONS

ALL CONTRACTOR WORK MUST COMPLY WITH THE GOVERNING CODES & REFERENCES:

1. NJIBC 2021, NJIMC 2021, NJIECC 2021 NJIPC 2021, NJIFGC 2021, NJIFC 2021

SUMMER OUTDOOR DESIGN CONDITIONS:

1. DESIGN REGION: CAPE MAY, NJ
2. DRY BULB: 87.8°F
3. WET BULB: 75.2°F

SUMMER INDOOR DESIGN CONDITIONS:

1. DRY BULB: 72°F
2. RELATIVE HUMIDITY: 50% MAXIMUM

WINTER OUTDOOR DESIGN CONDITIONS:

1. DESIGN REGION: CAPE MAY, NJ
2. DRY BULB: 19.0°F

WINTER INDOOR DESIGN CONDITIONS:

1. DRY BULB: 70°F
2. RELATIVE HUMIDITY: NO MINIMUM RH CONTROL PROVIDED

VENTILATION REQUIREMENTS:

1. PER THE APPLICABLE MECHANICAL CODE LISTED ABOVE.

FILTRATION:

1. 30% PLEATED PRE-FILTER MEDIA

SEISMIC DESIGN CRITERIA:

PROVIDE SEISMIC RESTRAINTS IN ACCORDANCE WITH THE APPLICABLE BUILDING CODE STATED ABOVE.

ALL ROOF MOUNTED EQUIPMENT SHALL BE ABLE TO WITHSTAND THE FOLLOWING WIND SPEEDS PER THE BUILDING CODE SECTION 1609. WIND SPEED: 100MPH TIMES ASCE STANDARD 07-16 FORCE FACTOR OF 1.9 = 190MPH

CODE REVIEW

PROJECT NOTES:

THE CONTRACTOR SHALL RECEIVE AND REVIEW ALL OF THE PROJECTS DRAWINGS AND SPECIFICATIONS SUCH AS ARCHITECTURAL, STRUCTURAL, HVAC, ELECTRICAL, PLUMBING, FIRE ALARM, SPRINKLER, SITE, ETC. TO UNDERSTAND THE FULL SCOPE OF WORK. FAILURE TO RECEIVE AND REVIEW THOSE PLANS DURING BIDDING WILL RESULT IN THE DENIAL OF EXTRA'S.

ALL DUCTWORK LOCATED ABOVE ELECTRICAL PANELS MUST BE SUPPLIED WITH A DRIP PAN THAT IS PIPED TO THE NEAREST AVAILABLE DRAIN AS PER NEC SEC.110.26 (F)(1)(b).

DRAWING LIST

BD engineering

NJ CERTIFICATE OF AUTHORIZATION - 24GA28116100
BD Engineering, LLC
30 Park Road, Suite 4, Tinton Falls, NJ 07724 732-886-5432

BRIAN D. TANNENHAUS

NJ PROFESSIONAL ENGINEER
NO. GE 45801

DATE:_____

ISSUED FOR BIDDING
NOT FOR CONSTRUCTION
01/23/2024

no.	by	description	date
		ISSUED FOR BIDDING	01/23/2024

revisions

CAPE MAY BOARDWALK BATHROOMS

702 BEACH AVENUE

CAPE MAY, NJ

project title

HVAC COVER SHEET

drawing name

scale AS NOTED

date 01/23/24

drawn by EH

project no. 220121

drawing no. M1.1

1/23/2024 4:31 PM

HVAC WORK SPECIFICATIONS

1. GENERAL

A. THE "GENERAL CONDITIONS OF THE CONTRACT FOR CONSTRUCTION," AIA DOCUMENT A201, LATEST EDITION, AND THESE SPECIFICATIONS AS APPLICABLE ARE PART OF THIS CONTRACT.

B. ALL APPLICABLE CODES, LAWS AND REGULATIONS GOVERNING OR RELATING TO ANY PORTION OF THIS WORK ARE HEREBY INCORPORATED INTO AND MADE PART OF THESE SPECIFICATIONS, AND THEIR PROVISIONS SHALL BE CARRIED OUT BY THE CONTRACTOR WHO SHALL INFORM THE OWNER, PRIOR TO SUBMITTING A PROPOSAL, OF ANY WORK OR MATERIAL WHICH VIOLATES ANY OF THE ABOVE LAWS AND REGULATIONS. ANY WORK DONE BY THE CONTRACTOR CAUSING SUCH VIOLATION SHALL BE CORRECTED BY THE CONTRACTOR AT THEIR OWN COST.

C. INVESTIGATE EACH SPACE THROUGH WHICH EQUIPMENT MUST BE MOVED. WHERE NECESSARY, EQUIPMENT SHALL BE SHIPPED FROM THE MANUFACTURE IN SECTIONS OF A SIZE SUITABLE FOR MOVING THROUGH AVAILABLE RESTRICTIVE SPACES. ASCERTAIN FROM THE BUILDING OWNER AND TENANT AT WHAT TIMES OF THE DAY EQUIPMENT MAY BE MOVED THROUGH ALL AREAS.

D. DRAWINGS ARE DIAGRAMMATIC AND INDICATE GENERAL ARRANGEMENT OF SYSTEMS AND WORK. PIPING AND OR DUCT ROUTING IS SHOWN DIAGRAMMATICALLY AND DOES NOT SHOW ALL OFFSETS, DROPS AND RISES OF RUNS. THE CONTRACTOR SHALL ALLOW IN HIS/HER PRICE FOR ROUTING OF PIPING AND DUCTS TO AVOID OBSTRUCTIONS. COORDINATION WITH EXISTING SERVICES, INCLUDING THOSE OF OTHER TRADES, IS REQUIRED. MAINTAIN HEADROOM AND SPACE CONDITIONS.

E. SUPPORT ALL DUCTWORK AND PIPING FROM BUILDING STRUCTURE AND/OR FRAMING IN AN APPROVED MANNER. WHERE OVERHEAD CONSTRUCTION DOES NOT PERMIT FASTENING OR SUPPORTS FOR EQUIPMENT, FURNISH ADDITIONAL FRAMING. INSERTS SHALL BE STEEL, SLOTTED TYPE AND FACTORY PAINTED. SINGLE ROD SHALL BE SIMILAR TO GRINNELL FIG. 281. MULTI-ROD SHALL BE SIMILAR TO FEE & MASON SERIES 9000 WITH END CAPS AND CLOSURE STRIPS. MAXIMUM LOADING INCLUDING PIPES, DUCTWORK CONTENTS AND COVERING SHALL NOT EXCEED 75% OF RATED INSERT CAPABILITY. WHEN SUPPORTING FROM BUILDING USE BEAM CLAMPS IN APPROVED MANNER. PROVIDE SEISMIC RESTRAINTS AS REQUIRED BY CODE.

F. INSTALL WORK AS TO BE READILY ACCESSIBLE FOR OPERATION, MAINTENANCE AND REPAIR. MINOR DEVIATIONS FROM THE DRAWINGS MAY BE MADE TO ACCOMPLISH THIS, BUT CHANGES, WHICH INVOLVE EXTRA COST, SHALL NOT BE MADE WITHOUT OUR OR OWNER APPROVAL.

G. REMOVAL AND RELOCATION OF CERTAIN EXISTING WORK MAY BE NECESSARY FOR THE PERFORMANCE OF THE GENERAL WORK. ALL EXISTING CONDITIONS CANNOT BE COMPLETELY DETAILED ON THE DRAWINGS. THE CONTRACTOR SHALL SURVEY THE SITE AND INCLUDE ALL CHANGES AND CHARGES IN MAKING UP THE WORK PROPOSED.

H. CONNECTIONS TO EXISTING WORK: INSTALL NEW WORK AND CONNECT TO EXISTING WORK WITH A MINIMUM INTERFERENCE TO EXISTING FACILITIES. TEMPORARY SHUTDOWNS OF EXISTING SERVICES SHALL BE PERFORMED AT NO ADDITIONAL CHARGES, AT TIMES NOT TO INTERFERE WITH NORMAL OPERATION OF EXISTING FACILITIES AND ONLY WITH WRITTEN CONSENT OF THE OWNER. ALARM AND EMERGENCY SYSTEMS SHALL NOT BE INTERRUPTED. MAINTAIN CONTINUOUS OPERATION OF THE EXISTING FACILITIES AS REQUIRED WITH NECESSARY TEMPORARY CONNECTIONS BETWEEN NEW AND EXISTING WORK. CONNECT NEW WORK TO EXISTING WORK IN NEAT AND ACCEPTABLE MANNER. RESTORE EXISTING DISTURBED WORK TO ORIGINAL CONDITION, INCLUDING MAINTENANCE OF WIRING CONTINUITY AS REQUIRED.

I. DISCONNECT, REMOVE AND/OR RELOCATE EXISTING MATERIAL, EQUIPMENT AND OTHER WORK AS NOTED OR REQUIRED FOR PROPER INSTALLATION OF NEW WORK.

J. ALL EXISTING MATERIAL, EQUIPMENT AND CONSTRUCTION DEBRIS TO BE REMOVED UNDER THIS CONTRACT SHALL BECOME THE PROPERTY OF THE CONTRACTOR WITH THE EXCEPTION OF SPECIFIC EQUIPMENT AND APPARATUS REQUESTED BY THE BUILDING REPRESENTATIVE, ARCHITECT OR AS NOTED TO BE RELOCATED ON THE DRAWINGS. REMOVED EQUIPMENT SHALL BE PROPERLY DISPOSED OF BY THIS CONTRACTOR.

K. THE CONTRACTOR SHALL KEEP ALL EQUIPMENT AND MATERIALS AND ALL PARTS OF THE BUILDING, EXTERIOR SPACES AND ADJACENT STREETS, SIDEWALKS AND PAVEMENTS, FREE FROM MATERIAL AND DEBRIS RESULTING FROM THE EXECUTION OF THIS WORK. EXCESS MATERIALS WILL NOT BE PERMITTED TO ACCUMULATE EITHER ON THE INTERIOR OR THE EXTERIOR.

L. SEAL OPENING THROUGH PARTITIONS, WALLS AND FLOORS WITH MINERAL WOOL OR OTHER NONCOMBUSTIBLE MATERIAL. ALL PENETRATIONS THROUGH NEW AND EXISTING RATED FIRE AND SMOKE PARTITIONS AND/OR FLOORS SHALL BE COMPLETELY SEALED USING MATERIALS AND METHODS DESCRIBED IN SUBSEQUENT "FIRE STOPPING" SPECIFICATIONS SECTIONS.

M. PROVIDE ALL NECESSARY FLASHING AND COUNTERFLASHING TO MAINTAIN THE WATERPROOFING INTEGRITY OF THE BUILDING AS REQUIRED BY THE INSTALLATION OR REMOVAL OF PIPING, DUCTWORK AND EQUIPMENT. PROVIDE EQUIPMENT CURBS AS REQUIRED AND POSITIVELY ATTACH THE EQUIPMENT TO THE STRUCTURE BELOW.

N. THE WORK IN THE BUILDING SHALL BE DONE WHEN AND AS DIRECTED, IN A MANNER SATISFACTORY TO THE OWNER. THE WORK SHALL BE PERFORMED AS TO CAUSE THE LEAST POSSIBLE INCONVENIENCE AND DISTURBANCE TO THE PRESENT OCCUPANTS.

O. THE CONTRACTOR'S PROPOSAL FOR ALL WORK SHALL BE PREDICATED ON THE PERFORMANCE OF THE WORK DURING REGULAR WORKING HOURS. WHEN SO DIRECTED, HOWEVER, THE CONTRACTOR SHALL INSTALL WORK DURING OVERTIME HOURS AND THE ADDITIONAL COST TO BE CHARGED THEREFORE SHALL BE ONLY THE "PREMIUM" PORTION OF THE WAGES PAID.

P. UNLESS OTHERWISE SPECIFICALLY NOTED OF SPECIFIED, INCLUDE ALL CUTTING AND PATCHING OF EXISTING FLOORS, WALLS, PARTITIONS AND OTHER MATERIALS IN THE EXISTING BUILDING. THE CONTRACTOR SHALL RESTORE THESE AREAS TO ORIGINAL CONDITION.

Q. REMOVABLE ACCESS TILE AND/OR ACCESS DOOR ARE REQUIRED IN CEILINGS, SHAFTS AND WALLS FOR ALL VOLUME AND FIRE DAMPERS, AUTOMATIC DAMPERS AND ALL OTHER MECHANICAL EQUIPMENT AND DEVICES. HVAC CONTRACTOR IS RESPONSIBLE TO PROVIDE APPROPRIATELY SIZED/RATED ACCESS DOORS WITH LOCATIONS COORDINATED WITH ALL TRADES AND THE GENERAL CONTRACTOR FOR OVERALL INSTALLATION COORDINATION. IN ORDER TO CLEARLY IDENTIFY THE LOCATION AND PURPOSE OF THE ACCESS DOOR, THE HAVC CONTRACTOR SHALL PROVIDE THE FOLLOWING ACCESS DOOR IDENTIFICATION INFORMATION: PROVIDE BUTTONS, TABS, AND MARKERS TO IDENTIFY LOCATION OF CONCEALED VALVES, DAMPERS AND EQUIPMENT.

R. ALL MATERIAL AND EQUIPMENT SHALL BE NEW UNLESS OTHERWISE NOTED AND SHALL BE IN ACCORDANCE WITH BUILDING STANDARDS.

S. SUBMISSION OF A PROPOSAL SHALL BE CONSTRUED AS EVIDENCE THAT A CAREFUL EXAMINATION OF ALL OF THE PLANS APPLICABLE FOR THE PROJECT AND NOT JUST THE HVAC PLANS AND IS FAMILIAR WITH ANY PROPOSED CONDITIONS THAT WILL NEED TO BE COORDINATED IN THE FIELD. FOR EXISTING BUILDINGS: THE PORTIONS OF THE EXISTING BUILDING, EQUIPMENT, ETC., WHICH AFFECT THIS WORK, AND THE ACCESS TO SUCH SPACES, HAS BEEN MADE AND THAT THE CONTRACTOR IS FAMILIAR WITH EXISTING CONDITIONS AND DIFFICULTIES THAT WILL AFFECT THE EXECUTION OF THE WORK. THE CONTRACTOR IS RESPONSIBLE TO INDICATE ANY DISCREPANCIES BETWEEN THE CONTRACT DRAWINGS AND ACTUAL FIELD CONDITIONS PRIOR TO SUBMITTAL OF BID. SUBMISSION OF A PROPOSAL WILL BE CONSTRUED AS EVIDENCE THAT THE CONTRACTOR HAS TOROUGHLY REVIEWED ALL OF THE DOCUMENTATION ASSOCIATED WITH THE PROJECT AND IF AN EXISTING BUILDING REVIEWED ALL OF THE EXISTING CONDITIONS. LATER CLAIMS SHALL NOT BE MADE FOR LABOR, EQUIPMENT OR MATERIALS REQUIRED BECAUSE OF DIFFICULTIES ENCOUNTERED WHICH COULD HAVE BEEN FORESEEN DURING SUCH AN EXAMINATION AND REVIEW. THE ON-SITE INSPECTION SHALL VERIFY EXISTING EQUIPMENT, PIPING AND DUCTWORK (SIZES, CLEARANCES, ETC.) AND CONDITIONS.

T. INSURANCE: IN ACCORDANCE WITH BUILDING REQUIREMENTS AND SHALL INCLUDE A HOLD HARMLESS CLAUSE FOR OWNER AND ENGINEER.

U. THE FINAL ACCEPTANCE SHALL BE MADE AFTER THE CONTRACTOR HAS ADJUSTED HIS EQUIPMENT, TESTED AND BALANCED THE VARIOUS SYSTEMS, DEMONSTRATED THAT IT FULFILLS THE REQUIREMENTS OF THE DRAWINGS AND SPECIFICATIONS AND HAS FURNISHED ALL THE REQUIRED CERTIFICATES OF INSPECTION AND APPROVAL.

V. SPECIFICATIONS ARE OF SIMPLIFIED FORM AND INCLUDE INCOMPLETE SENTENCES. WORDS OR PHRASES SUCH AS "THE CONTRACTOR SHALL," "SHALL BE," "FURNISH," "PROVIDE," "A," "THE," AND "ALL" HAVE BEEN OMITTED FOR BREVITY.

W. DEFINITIONS:

1. "PROVIDE": TO SUPPLY, INSTALL AND CONNECT UP COMPLETE AND READY FOR SAFE AND REGULAR OPERATION THE PARTICULAR WORK REFERRED TO UNLESS SPECIFICALLY OTHERWISE NOTED.

2. "INSTALL": TO ERECT, MOUNT AND CONNECT COMPLETE WITH RELATED ACCESSORIES.

3. "FURNISH" OR "SUPPLY": TO PURCHASE, PROCURE, ACQUIRE AND DELIVER COMPLETE WITH RELATED ACCESSORIES.

4. "WORK": LABOR, MATERIALS, EQUIPMENT, APPARATUS, CONTROLS, ACCESSORIES AND OTHER ITEMS REQUIRED FOR PROPER AND COMPLETE INSTALLATION.

5. "CONCEALED": EMBEDDED IN MASONRY OR OTHER CONSTRUCTION, INSTALLED IN FURRED SPACES, WITHIN DOUBLE PARTITIONS OR HUNG CEILINGS, IN TRENCHES, IN CRAWL SPACES, OR IN ENCLOSURES.

6. "EXPOSED": NOT INSTALLED UNDERGROUND OR "CONCEALED" AS DEFINED ABOVE.

7. "SIMILAR" OR "EQUAL": EQUAL IN MATERIALS, WEIGHT, SIZE, DESIGN AND EFFICIENCY OF SPECIFIED PRODUCT.

2. SCOPE OF WORK:

A. THE SCOPE OF WORK SHALL CONSIST OF PROVIDING LABOR, MATERIALS, EQUIPMENT, SERVICES AND FEES NECESSARY FOR COMPLETE AND SAFE INSTALLATION IN CONFORMITY WITH THE APPLICABLE MECHANICAL CODES AND ALL OTHER INDUSTRY, STATE, NATIONAL AND LOCAL CODES AND AUTHORITIES HAVING JURISDICTION, AS INDICATED ON THE DRAWINGS AND HEREIN SPECIFIED.

B. ALL DRAWINGS, PLANS, DETAILS, SPECIFICATIONS AND SPECIFICATION ADDENDA ARE MADE PART OF THIS CONTRACT AND SHALL APPLY TO ALL WORK UNDER THE CONTRACT UNLESS OTHERWISE AMENDED, MODIFIED, SUPPLEMENTED OR SPECIFIED HEREIN.

C. THE CONTRACTOR SHALL FURNISH A WRITTEN GUARANTEE TO REPLACE OF REPAIR PROMPTLY AND ASSUME RESPONSIBILITY FOR ALL EXPENSES INCURRED FOR ANY WORKMANSHIP AND EQUIPMENT IN WHICH DEFECTS DEVELOP WITHIN ONE YEAR FROM THE DATED OF FINAL CERTIFICATE FOR PAYMENT AND/OR FROM DATE OR ACTUAL USE OF EQUIPMENT OR OCCUPANCY OF SPACES BY THE OWNER INCLUDED UNDER THE VARIOUS PARTS OF THE WORK, WHICHEVER DATE IS EARLIER. THIS WORK SHALL BE DONE AS DIRECTED BY THE OWNER. THIS GUARANTEE SHALL ALSO PROVIDE THAT WHERE DEFECTS OCCUR, THE CONTRACTOR SHALL ASSUME RESPONSIBILITY FOR ALL EXPENSES INCURRED IN REPAIRING AND REPLACING WORK OF OTHER TRADES AFFECTED BE DEFECTS, REPAIRS OR REPLACEMENTS IN EQUIPMENT SUPPLIED BY THE CONTRACTOR.

D. THE CONTRACTOR SHALL GIVE NECESSARY NOTICE, FILE DRAWINGS AND SPECIFICATIONS WITH ALL DEPARTMENTS HAVING JURISDICTION, OBTAIN PERMITS OR LICENSES NECESSARY TO CARRY OUT THIS WORK AND PAY ALL FEES THEREFORE. THE CONTRACTOR SHALL ARRANGE FOR INSPECTION AND TESTS OF ANY OR ALL PARTS OF THE WORK IF SO REQUIRED BY AUTHORITIES FOR, AND FURNISH TO THE OWNER BEFORE BILLING, ALL CERTIFICATES NECESSARY AS EVIDENCE THE WORK INSTALLED CONFORMS WITH ALL REGULATIONS WHERE THEY APPLY TO THIS WORK.

3. SHOP DRAWINGS:

A. PRIOR TO THE INSTALLATION OF ANY WORK AND PROCUREMENT OF EQUIPMENT, THE CONTRACTOR SHALL PROVIDE COMPLETE SETS OF COORDINATED SHOP DRAWINGS OF ALL NEW AND EXISTING EQUIPMENT, INDICATING CAPACITY, DIMENSIONS AND SEQUENCE OF OPERATION FOR WRITTEN APPROVAL BY THE ARCHITECT AND ENGINEER.

B. THE CONTRACTOR SHALL PREPARE FULL COORDINATED COMPOSITE DRAWINGS FOR THE MECHANICAL, ELECTRICAL AND FIRE PROTECTION TRADES. THE CONTRACTOR SHALL OVERLAY EACH TRADE'S WORK (IN SEPARATE COLORS) ON A REPRODUCIBLE SET OF SHEETMETAL DRAWINGS. ALL CONFLICTS AND POTENTIAL CONFLICTS SHALL BE CLEARLY IDENTIFIED ON THE SHEETMETAL DRAWINGS. THIS SHALL INCLUDE BUT NOT BE LIMITED TO CONFLICTS WITH LIGHTS, EQUIPMENT, PIPING, DUCTWORK AND SUPPORTS OF OTHER TRADES, AS WELL AS CONFLICTS WITH ARCHITECTURAL AND STRUCTURAL WALLS, COLUMNS, CEILINGS AND STRUCTURAL BEAMS.

C. INDICATE ON EACH SHOP DRAWINGS SUBMITTED:

1. PROJECT NAME AND LOCATION

2. NAME OF ARCHITECT AND ENGINEER

3. ITEM IDENTIFICATION

4. APPROVAL STAMP OF THE PRIME CONTRACTOR

D. SUBMISSIONS:

1. SUBMISSIONS 11 IN X 17 IN OR SMALLER. IF THE SUBMISSION IS A CATALOG CUT, THEN THE CONTRACTOR SHALL SUBMIT ONE ORIGINAL AND TWO COPIES. OTHERWISE, HE SHALL SUBMIT THREE COPIES. THE ARCHITECT WILL FORWARD THE ORIGINAL AND ONE COPY (TWO COPIES WHEN NO ORIGINAL IS RECEIVED) TO THE ENGINEER. ALL CATALOG CUTS SHALL BE COMPLETE.

2. SUBMISSIONS LARGER THAN 11 IN X 17 IN. SUBMIT TWO PRINTS TO THE ARCHITECT. THE ARCHITECT WILL FORWARD ONE PRINT TO THE ENGINEER.

4. SUBMIT SHOP DRAWINGS FOR THE FOLLOWING

A. SUBMIT SHOP DRAWINGS FOR THE FOLLOWING:

1. DUCTWORK LAYOUT AND SHEET METAL DESIGNS.

2. AIR OUTLETS.

3. AIR BALANCE REPORT.

4. AC UNITS AND FANS.

5. PIPING LAYOUT.

6. INSULATION

7. VIBRATION ISOLATION.

8. MOTORIZED AND NON-MOTORIZED DAMPERS

9. ASHRAE 90.1 REQUIRED COMPLETION DOCUEMENTS BUT AS A MINIMUM:

i. DRAWINGS. CONSTRUCTION DOCUMENTS SHALL REQUIRE THAT, WITHIN 90 DAYS AFTER THE DATE OF SYSTEM ACCEPTANCE, RECORD DRAWINGS OF THE ACTUAL INSTALLATION BE PROVIDED TO THE BUILDING OWNER OR THE DESIGNATED REPRESENTATIVE OF THE BUILDING OWNER. RECORD DRAWINGS SHALL INCLUDE, AS A MINIMUM, THE LOCATION AND PERFORMANCE DATA ON EACH PIECE OF EQUIPMENT; GENERAL CONFIGURATION OF THE DUCT AND PIPE DISTRIBUTION SYSTEM, INCLUDING SIZES; AND THE TERMINAL AIR OR WATER DESIGN FLOW RATES.

ii. MANUALS. CONSTRUCTION DOCUMENTS SHALL REQUIRE THAT AN OPERATING MANUAL AND A MAINTENANCE MANUAL BE PROVIDED TO THE BUILDING OWNER OR THE DESIGNATED REPRESENTATIVE OF THE BUILDING OWNER WITHIN 90 DAYS AFTER THE DATE OF SYSTEM ACCEPTANCE. THESE MANUALS SHALL BE IN ACCORDANCE WITH INDUSTRY-ACCEPTED STANDARDS (SEE INFORMATIVE APPENDIX E) AND SHALL INCLUDE, AT A MINIMUM, THE FOLLOWING:

1. SUBMITTAL DATA STATING EQUIPMENT SIZE AND SELECTED OPTIONS FOR EACH PIECE OF EQUIPMENT REQUIRING MAINTENANCE.

2. OPERATION MANUALS AND MAINTENANCE MANUALS FOR EACH PIECE OF EQUIPMENT AND SYSTEM REQUIRING MAINTENANCE, EXCEPT EQUIPMENT NOT FURNISHED AS PART OF THE PROJECT. REQUIRED ROUTINE MAINTENANCE ACTIONS SHALL BE CLEARLY IDENTIFIED.

3. NAMES AND ADDRESSES OF AT LEAST ONE SERVICE AGENCY.

4. HVAC CONTROLS SYSTEM MAINTENANCE AND CALIBRATION INFORMATION, INCLUDING WIRING DIAGRAMS, SCHEMATICS, AND CONTROL SEQUENCE DESCRIPTIONS. DESIRED OR FIELD-DETERMINED SETPOINTS SHALL BE PERMANENTLY RECORDED ON CONTROL DRAWINGS AT CONTROL DEVICES OR, FOR DIGITAL CONTROL SYSTEMS, IN PROGRAMMING COMMENTS.

5. COMPLETE NARRATIVE OF HOW EACH SYSTEM IS INTENDED TO OPERATE, INCLUDING SUGGESTED SETPOINTS.

B. SHOP DRAWINGS

1. PREPARE AND SUBMIT DETAILED SHOP DRAWINGS FOR PIPING WORK AND OTHER DISTRIBUTION SERVICES, INCLUDING LOCATIONS AND SIZES OF ALL OPENINGS IN FLOOR WALLS AND ROOFS

2. THE WORK DESCRIBED IN ANY SHOP DRAWING SUBMISSION SHALL BE CAREFULLY CHECKED FOR ALL CLEARANCES (INCLUDING THOSE REQUIRED FOR MAINTENANCE AND SERVICING), FIELD CONDITIONS, MAINTENANCE OF ARCHITECTURAL CONDITIONS AND PROPER COORDINATION WITH ALL TRADES ON THE JOB.

3. EACH SUBMITTED SHOP DRAWING TO INCLUDE A CERTIFICATION THAT ALL RELATED JOB CONDITIONS HAVE BEEN CHECKED AND THAT NO CONFLICT EXISTS.

4. ALL DRAWINGS TO BE SUBMITTED SUFFICIENTLY IN ADVANCE OF FIELD REQUIREMENTS TO ALLOW AMPLE TIME FOR CHECKING. ALL SUBMITTALS TO BE COMPLETE AND CONTAIN ALL REQUIRED AND DETAILED INFORMATION. SHOP DRAWINGS WITH MULTIPLE PARTS SHALL BE SUBMITTED AS A PACKAGE.

5. IF SUBMITTALS DIFFER FROM THE CONTRACT DOCUMENT REQUIREMENTS, MAKE SPECIFIC MENTION OF SUCH DIFFERENCE IN A LETTER OF TRANSMITTAL, WITH REQUEST FOR SUBSTITUTION, TOGETHER WITH REASONS FOR SAME.

6. REVIEW OF ANY SUBMITTED DATA OR SHOP DRAWINGS FOR MATERIAL, EQUIPMENT APPARATUS, DEVICES, ARRANGEMENT AND LAYOUT SHALL NOT RELIEVE CONTRACTOR FROM RESPONSIBILITY OF FURNISHING SAME OF PROPER DIMENSIONS AND WEIGHT, CAPACITIES, SIZES, QUANTITY, QUALITY AND INSTALLATION DETAILS TO EFFICIENTLY PERFORM THE REQUIREMENTS AND INTENT OF THE WORK. SUCH REVIEW SHALL NOT RELIEVE THE CONTRACTOR FROM RESPONSIBILITY FOR ERRORS, OMISSIONS OR INADEQUACIES OF ANY SORT ON SUBMITTED DATA OR SHOP DRAWINGS.

7. EACH SHOP DRAWING TO CONTAIN JOB TITLE CONTRACTOR AND SUBCONTRACTOR NAMES AND PHONE NUMBERS, REFERENCE TO THE APPLICABLE DESIGN DRAWING OR SPECIFICATION ARTICLE, DATE AND SCALE.

8. WITHIN 15 DAYS AFTER AWARD OF CONTRACT, SUBMIT FOR REVIEW, A LIST OF ALL MATERIAL AND EQUIPMENT MANUFACTURERS WHOSE PRODUCTS ARE PROPOSED, AS WELL AS NAMES OF ALL SUBCONTRACTORS WHOM THIS TRADE PROPOSES TO EMPLOY.

C. RECORD DRAWINGS

1. THE CONTRACTOR SHALL MAINTAIN ON A DAILY BASIS AT THE PROJECT SITE A COMPLETE SET OF "RECORD DRAWINGS", REFLECTING AN ACCURATE DIMENSIONAL RECORD OF ALL WORK. THE "RECORD DRAWINGS" SHALL ALSO CONSIST OF A SET OF PRINTS OF THE FINAL "SIGNED OFF" CONTRACTOR'S "COORDINATION DRAWINGS" PREPARED BY THE SUBCONTRACTORS. IN ADDITION, THE "RECORD DRAWINGS SHALL BE MARKED TO SHOW THE PRECISE LOCATION OF CONCEALED WORK AND EQUIPMENT, INCLUDING CONCEALED OR EMBEDDED PIPING AND VALVES AND ALL CHANGES AND DEVIATIONS IN THE MECHANICAL WORK FROM THAT SHOWN ON THE CONTRACT DOCUMENTS. THIS REQUIREMENT SHALL NOT BE CONSTRUED AS AUTHORIZATION FOR THE CONTRACTOR TO MAKE CHANGES IN THE LAYOUT OR WORK WITHOUT WRITTEN DEFINITE INSTRUCTIONS FROM THE ARCHITECT OR ENGINEER. THE DAILY "RECORD DRAWINGS" SHALL CONSIST OF A SET OF PRINTS OF THE CONTRACT DRAWINGS FOR THIS DIVISION WITH THE ENGINEER'S SEAL AND ENGINEER'S FIRM NAME REMOVED OR BLACKED OUT. PRIOR TO COMMENCING WORK, THE CONTRACTOR SHALL PURCHASE FROM THE ARCHITECT OR ENGINEER A SET OF PRINTS TO BE USED FOR THE DAILY "RECORD DRAWINGS".

2. RECORD DIMENSIONS SHALL CLEARLY AND ACCURATELY DELINEATE THE WORK AS INSTALLED; LOCATIONS SHALL BE SUITABLY IDENTIFIED BY AT LEAST TWO DIMENSIONS TO PERMANENT STRUCTURES.

3. PRIOR TO FINAL ACCEPTANCE OF THE WORK OF THIS DIVISION, THE CONTRACTOR SHALL SUBMIT PROPERLY CERTIFIED "RECORD DRAWINGS" TO THE ARCHITECT AND ENGINEER FOR REVIEW AND SHALL MAKE CHANGES, CORRECTIONS, OR ADDITIONS AS THE ARCHITECT MAY REQUIRE TO THE "RECORD DRAWINGS". AFTER THE ARCHITECT AND ENGINEER REVIEW, THE "RECORD DRAWINGS" SHALL BE DELIVERED TO THE OWNER.

4. THE HVAC CONTRACTOR SHALL TAG/LABEL ALL EQUIPMENT AND SYSTEM COMPONENTS AND SUBMIT AS-BUILT DRAWINGS LOCATING ALL ACCESS DOORS AND PROVIDE A DETAILED LIST OF ALL SYSTEM COMPONENTS FOR WHICH THE ACCESS DOOR HAS BEEN PROVIDED. THIS DRAWING SHALL SERVE AS A "ROAD MAP" FOR THE OWNER TO PERFORM FUTURE MAINTENANCE.

5. SHEET METAL WORK

A. EXCEPT AS OTHERWISE SHOWN OR NOTED, ALL DUCTWORK AND OTHER SHEET METAL WORK SHALL BE GALVANIZED SHEET STEEL AND SHALL BE INSTALLED IN ACCORDANCE WITH THE LATEST EDITION OF SHEET METAL AND AIR CONDITIONING CONTRACTORS NATIONAL ASSOCIATION, INC. DUCT CONSTRUCTION STANDARDS, PRESSURE CLASSIFICATION 1 IN. W.G.

B. VOLUME DAMPERS: GALVANIZED STEEL, PER SMACNA "LOW VELOCITY MANUAL," EXCEPT PROVIDE BEARING AT ONE END OF DAMPER ROD AND QUADRANT, WITH LEVER AND LOCKSCREW AT OTHER END. FOR INSULATED DUCTS, QUADRANTS MOUNTED ON COLLAR TO CLEAR INSULATION. INSTALL WITH LEVERS ACCESSIBLE.

C. FLEXIBLE CONNECTIONS: NEOPRENE-COATED GLASS FABRIC, 30 OZ PER SQ YD WITH SEWED AND CEMENTED SEAMS, SIMILAR TO VENT FABRICS. PROVIDE WITH METAL COLLARS. ALLOW MINIMUM MOVEMENT OF 1 IN.

D. TURNING VANES: GALVANIZED STEEL SMALL DOUBLE-THICKNESS VANES WITH 2 IN. INSIDE RADIUS.

E. ALL DUCT DIMENSIONS INDICATED ON PLANS ARE INSIDE CLEAR DIMENSIONS.

F. LOW PRESSURE FLEXIBLE DUCT: SHALL BE A FACTORY FABRICATED HIGH TEMPERATURE COPOLYMER IMPREGNATED GLASS FABRIC, LOCKED TO COLD ROLLED FLAT STEEL SPIRAL. SIMILAR TO THERMAFLEX. MAXIMUM INSTALLED LENGTH SHALL NOT EXCEED 5 FEET.

G. OUTDOOR DUCTWORK SHALL BE LEAK TESTED PER ASHRAE 90.1 AND TESTED TO INDUSTRY-ACCEPTED TEST PROCEDURES PER APPENDIX IN ASHRAE 90.1.

6. AIR OUTLETS

A. GENERAL:

1. MARGIN TYPES, COLORS, FINISH AND METHODS OF ATTACHMENT FOR ALL DIFFUSERS, GRILLES AND REGISTERS SHALL BE COORDINATED WITH ARCHITECTURAL CEILING AND WALL DETAILS AND SPECIFICATIONS.

2. FRAME TYPE SUITABLE FOR MOUNTING IN CEILING OR WALL CONSTRUCTION AS INDICATED ON ARCHITECTURAL PLANS.

3. EXACT LOCATION OF ALL AIR OUTLETS AS PER ARCHITECTURAL PLANS.

4. SUITABLE FOR OPERATION AT 20% EXCESS AND 20% LESS THAN NOTED CAPACITY FOR CONSTANT VOLUME SYSTEMS AND AT 20% EXCESS AND 60% LESS THAN NOTED CAPACITY FOR VARIABLE VOLUME SYSTEMS. MANUFACTURER RESPONSIBLE FOR EXAMINING APPLICATION OF EACH OUTLET AND GUARANTEE THAT EACH WILL PROVIDE REQUIRED NC LEVELS AND COMFORT SPACE CONDITIONS WITHOUT DRAFTS THROUGHOUT OPERATING RANGE.

5. DIFFUSERS, GRILLES AND REGISTERS SHALL BE SELECTED TO ACHIEVE NC 35 OR LESS WHEN INSTALLED.

6. ALL REGISTERS AND DIFFUSERS SHALL BE PROVIDED WITH OPPOSED BLADE VOLUME DAMPERS. DAMPER OPERATING LEVERS SHALL BE ACCESSIBLE AT THE FACE OF AIR OUTLETS.

B. REGISTERS AND GRILLES:

1. RETURN AND EXHAUST REGISTERS: STEEL CONSTRUCTION WITH VOLUME DAMPER.

2. SUPPLY REGISTERS: ALUMINUM CONSTRUCTION, ADJUSTABLE DOUBLE DEFLECTION ALUMINUM AIRFOIL LOUVERS, WITH VOLUME DAMPER. PROVIDE AIR EQUALIZING DEFLECTOR WHERE REGISTER COLLAR DUCT IS LESS THAN 2 FT LONG.

3. TRANSFER GRILLES: STEEL CONSTRUCTION WITHOUT VOLUME DAMPER.

C. DIFFUSERS:

1. PERFORATED FACE SUPPLY: STEEL FACE WITH 1, 2, 3 OR 4 WAY ADJUSTABLE PATTERN, ROUND INLET COLLAR. WITH MATCHING RETURN.

7. APPLIANCE VENTING

a) NON-CONDENSING/NEGATIVE PRESSURE = CATEGORY 1 VENT TYPE: B-VENT DOUBLE WALL

b) NON-CONDENSING/POSITIVE PRESSURE = CATEGORY III VENT TYPE:
FORCED DRAFT: UL P-STACK DOUBLE WALL DIRECT VENT: AL29-4C DOUBLE WALL

c) CONDENSING/NEGATIVE PRESSURE = CATEGORY II VENT TYPE:
AL29-4C DOUBLE WALL

d) CONDENSING/POSITIVE PRESSURE = CATEGORY IV VENT TYPE:
AL29-4C DOUBLE WALL

NOTES:

1. THIS VENT SYSTEM CATEGORY TYPES ABOVE IS PROVIDED TO INDICATE THE VENT MATERIAL TYPE THAT WILL BE REQUIRED BASED UPON THE APPLIANCE VENTING REQUIREMENTS. CONTRACTOR SHALL MAKE SURE THAT DURING BIDDING THEY CHECK WITH THE APPLIANCE MANUFACTURE FOR THE EXACT TYPE OF VENTING REQUIRED. SOME MANUFACTURES ONLT ALLOW ONE VENT TYPE OR VENT MANUFACTURE TYPE. FAILURE TO COORDINATE THIS DURING BIDDING WILL RESULT IN THE DENIAL OF ANY EXTRA'S.

2. VENTING MATERIAL SHALL MATCH THE APPLIANCE TYPE AND BE AS PER THE MANUFACTURER'S REQUIREMENTS.

3. THE VENT TYPE SHOWN IS THE TYPE REQUIRED UNLESS INDICATED OTHERWISE ON THE PLANS. ALTERNATES WILL BE REVIEWED IF THE MANUFACTURER OF THE APPLIANCE APPROVES A DIFFERENT VENTING MATERIAL. THIS SHOULD BE BROUGHT TO THE ATTENTION OF THE ENGINEER DURING THE BIDDING PROCESS. FAILURE TO PROVIDE THIS DURING THE BIDDING PROCESS WILL RESULT IN THE DENIAL OF ANY ADDITIONAL CHARGES.

8. TESTING, BALANCING AND COMMISSIONING

A. ALL AIR BALANCING SHALL BE IN ACCORDANCE WITH AABC, NEBB STANDARDS, AND ASHRAE 90.1.

B. AIR BALANCING SHALL BE ACCOMPLISHED BY ADJUSTMENT OF FANS AND BRANCH DAMPERS FOR MAJOR ADJUSTMENTS. ADJUSTMENT OF TERMINAL DAMPERS AND DEVICES SHALL BE FOR TRIM OR MINOR ADJUSTMENT ONLY. THIS SHALL BE DONE TO PERMIT THE LEAST NOISE GENERATION IN THE TERMINAL AREAS AND UTILIZE MINIMUM FAN ENERGY.

C. UPON COMPLETION OF THE INSTALLATION, THE CONTRACTOR SHALL REBALANCE ANY EXISTING PORTIONS OF AIR DISTRIBUTION SYSTEM AND WATER DISTRIBUTION SYSTEM AFFECTED BY THE RENOVATION AND ALSO BALANCE ALL NEW WORK.

D. THE CONTRACTOR SHALL PROVIDE ALL LABOR, PRESSURE GAUGES, FLOW METERS, SHEAVES, AND BELTS REQUIRED TO BALANCE SYSTEMS.

E. BALANCING REPORT SHALL BE PROVIDED ON AABC-TYPE FORMS.

F. FANS, AIR HANDLING UNITS AND COILS SHALL BE BALANCED TO WITHIN +5% OF THEIR DESIGN CAPACITIES. ALL OTHER AIR QUANTITIES SHALL BE BALANCED TO WITHIN +10% OF THE DESIGN QUANTITIES.

G. BALANCING AND TESTING SHALL BE PERFORMED AND SUPERVISED BY A CERTIFIED NEBB OR AABC TECHNICIAN:

H. THE PERFORMANCE AND CAPACITY OF ALL SYSTEMS AND EQUIPMENT TO BE DEMONSTRATED BY THE CONTRACTOR.

I. **AIR SYSTEM BALANCING.** AIR SYSTEMS SHALL BE BALANCED IN A MANNER TO FIRST MINIMIZE THROTTLING LOSSES. THEN, FOR FANS WITH FAN SYSTEM POWER GREATER THAN 1 HP, FAN SPEED SHALL BE ADJUSTED TO MEET DESIGN FLOW CONDITIONS.

J. **HYDRONIC SYSTEM BALANCING.** HYDRONIC SYSTEMS SHALL BE PROPORTIONATELY BALANCED IN A MANNER TO FIRST MINIMIZE THROTTLING LOSSES; THEN THE PUMP IMPELLER SHALL BE TRIMMED OR PUMP SPEED SHALL BE ADJUSTED TO MEET DESIGN FLOW CONDITIONS.

EXCEPTIONS: IMPELLERS NEED NOT BE TRIMMED NOR PUMP SPEED ADJUSTED

a. FOR PUMPS WITH PUMP MOTORS OF 10 HP OR LESS OR

b. WHEN THROTTLING RESULTS IN NO GREATER THAN 5% OF THE NAMEPLATE HORSEPOWER DRAW, OR 3 HP, WHICHEVER IS GREATER, ABOVE THAT REQUIRED IF THE IMPELLER WAS TRIMMED.

K. **SYSTEM COMMISSIONING.** HVAC CONTROL SYSTEMS SHALL BE TESTED TO ENSURE THAT CONTROL ELEMENTS ARE CALIBRATED, ADJUSTED, AND IN PROPER WORKING CONDITION. FOR PROJECTS LARGER THAN 50,000 FT2 CONDITIONED AREA, EXCEPT WAREHOUSES AND SEMIHEATED SPACES, DETAILED INSTRUCTIONS FOR COMMISSIONING HVAC SYSTEMS (SEE INFORMATIVE APPENDIX E) SHALL BE PROVIDED BY THE DESIGNER IN PLANS AND SPECIFICATIONS.

9. INSULATION - GENERAL REQUIREMENTS

A. ALL INSULATION MATERIALS, INCLUDING JACKETS, FACING, ADHESIVE, COATINGS, AND ACCESSORIES ARE TO BE FIRE HAZARD RATED AND LISTED BY UNDERWRITERS LABORATORIES, INC. USING STEINER TUNNEL TEST METHOD FOR FIRE HAZARD CLASSIFICATION OF BUILDING MATERIALS, STANDARD UL 723 (ASTM E-84), (ASA A2.5-1963). FLAMESPREAD: MAXIMUM 25. FUEL CONTRIBUTED AND SMOKE DEVELOPED: MAXIMUM 50. FLAMEPROOFING TREATMENTS SUBJECT TO DETERIORATION FROM MOISTURE OR HUMIDITY ARE NOT ACCEPTABLE.

B. DEFINITIONS:

1. EXPOSED: INDOOR DUCTS, PIPING OR EQUIPMENT LOCATED IN MECHANICAL EQUIPMENT ROOMS AND IN AREAS WHICH WILL BE VISIBLE WITHOUT REMOVING CEILINGS OR OPENING ACCESS PANELS.

2. CONCEALED: INDOOR DUCTS, PIPING OR EQUIPMENT WHICH IS NOT EXPOSED.

3. OUTDOOR: DUCTS, PIPING OR EQUIPMENT WHICH IS EXPOSED TO THE WEATHER.

10. DUCTWORK INSULATION

A. INSULATE ALL DUCTWORK IN ACCORDANCE WITH INSULATION SCHEDULE EXCEPT AS OTHERWISE NOTED.

B. MATERIAL (INSULATION R-VALUE (HR·FT^2·°F.)/BTU):

1. DUCTS IN UNCONDITIONED SPACES

i. DUCTS IN UNCONDITIONED ATTICS OR OUTSIDE BUILDING.

1. SUPPLY = 8
2. RETURN = 8

ii. DUCTS IN UNCONDITIONED BASEMENTS, CRAWL SPACES, GARAGES, AND OTHER UNCONDITIONED SPACES

1. SUPPLY = 6
2. RETURN = 6

2. DUCTS ABOVE THE CEILING

1. SUPPLY = 8
2. RETURN = 8

SYSTEMS TO ACHIEVE REQUIRED R-VALUES FOR ASHRAE 90.1 AND IECC

R - 5:

1. AIR DUCT BOARD - 1-1/2" THICK (R 6.5)
2. SHEET METAL DUCTWORK WITH .75 PCF 2" DUCT WRAP (R 5.6 @ 25% COMPRESSION)
3. SHEET METAL DUCTWORK WITH 1.5 PCF 1-1/2" THICK ROTARY* DUCT LINER (R 6.0)

R - 8:

1. AIR DUCT BOARD - 2" THICK (R 8.7)
2. SHEET METAL DUCTWORK WITH .75 PCF 3" THICK DUCT WRAP (R 8.4 @ 25% COMPRESSION)
3. SHEET METAL DUCTWORK WITH 1.5 PCF 2" THICK ROTARY* DUCT LINER (R 8.0)

EXTERIOR DUCTWORK:

1. CELLULAR GLASS, TYPE I, - 2" THICK (R 8) OWENS CORNING FOAMGLAS OR EQUAL
2. VENTURECLAD INSULATION JACKETING SYSTEM - SEAL ALL INSULATION JOINTS WITH 3" ALUMINUM TAPE PRIOR TO INSTALLING VENTURECLAD JACKET

C. INSTALLATION:

1. EQUIPMENT INSULATION-FIBER GLASS

A. APPLY INSULATION TO THE EQUIPMENT SURFACE WITH JOINTS FIRMLY BUTTED AND AS CLOSE AS POSSIBLE TO THE EQUIPMENT SURFACE. INSULATION SHALL BE SECURED AS REQUIRED WITH MECHANICAL FASTENERS OR BANDING MATERIAL. FASTENERS SHALL BE LOCATED A MAXIMUM OF 3" FROM EACH EDGE AND SPACED NO GREATER THAN 12" ON CENTER.

B. FOR BELOW AMBIENT SYSTEMS, VAPOR RETARDER JACKETING SHALL OVERLAP A MINIMUM OF 2" AT ALL SEAMS AND BE SEALED WITH APPROPRIATE PRESSURE-SENSITIVE TAPE OR MASTIC. ALL PENETRATIONS AND FACING DAMAGE SHALL BE COVERED WITH A MINIMUM 2" OVERLAP OF TAPE OR MASTIC.

C. EQUIPMENT INSULATION EXPOSED TO THE ELEMENTS OR IN REFRIGERATED SPACES SHALL BE FINISHED WITH MINIMUM 0.030-INCH THICK, OUTDOOR, WEATHER RESISTANT PVC; LAMINATED SELF-ADHESIVE WATER BASED WEATHERPROOF MASTIC AND GLASS CLOTH; OR METAL. ALL LONGITUDINAL JOINTS SHALL BE POSITIONED SO AS TO SHED WATER; WITH A MINIMUM 3" OVERLAP, AND COMPLETELY WEATHER SEALED. LAMINATED SYSTEMS SHALL BE APPLIED PER MANUFACTURER'S RECOMMENDATIONS.

D. FOR HIGH-TEMPERATURE APPLICATIONS, INSULATION MAY EITHER BE MOUNTED IN DIRECT CONTACT WITH THE HOT SURFACE, IN H-BAR CONFIGURATION, OR PRE-FABRICATED PANEL SYSTEMS MOUNTED AWAY FROM THE OPERATING SURFACE. WHEN INSTALLING H-BAR OR PANEL SYSTEMS WHICH ARE MOUNTED AWAY FROM THE OPERATING SURFACE, CONVECTION STOPS SHALL BE INSTALLED AT A MAXIMUM OF 8 FEET ALONG THE VERTICAL SURFACES. INSULATION MAY BE APPLIED OVER WELDED PINS OR STUDS UP TO ½" IN DIAMETER. INSULATION SHALL BE HELD IN PLACE USING MESH REINFORCEMENT OR STEEL BANDS. INSULATION SHALL NOT BE COMPRESSED BEYOND A MAXIMUM OF 1/8 INCH AT ANY POINT. PINS AND STUDS SHALL BE SPACED A MAXIMUM OF 4" FROM EACH EDGE AND NO GREATER THAN 16" ON CENTER. FOR TEMPERATURES ABOVE 500°F (260°C) AND DESIGN THICKNESSES OVER 3", INSULATION SHALL BE APPLIED USING DOUBLE-LAYER WITH STAGGERED JOINTS. FINISH SHALL BE MINIMUM 0.020-INCH THICK PVC JACKETING, INSULATING CEMENT WITH CANVAS, GLASS CLOTH WITH MASTIC, OR METAL AS SPECIFIED ON THE DRAWINGS.

E. FOR EQUIPMENT INSULATION EXPOSED IN MECHANICAL ROOMS OR SUBJECT TO MECHANICAL ABUSE, FINISH WITH MINIMUM 0.020 INCH THICK PVC JACKETING OR METAL OR LAMINATED SELF-ADHESIVE WATER AND WEATHER SEALS. ALL OTHER INSULATION SHALL BE FINISHED AS APPROPRIATE FOR THE LOCATION AND SERVICE OR AS SPECIFIED ON THE DRAWINGS.

2. INTERNAL DUCT LINING

A. DUCT LINING SHALL BE APPLIED IN STRICT ACCORDANCE WITH THE LATEST EDITION OF SMACNA'S "HVAC DUCT CONSTRUCTION STANDARD METAL & FLEXIBLE" AND NAIMA'S "FIBROUS GLASS DUCT LINER STANDARD".

B. LENGTH OF MECHANICAL FASTENERS SHALL BE SELECTED IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATION AS LISTED ON EACH PRODUCT. MECHANICAL FASTENERS SHALL BE INSTALLED PERPENDICULAR TO THE DUCT SURFACE, AND IN NO INSTANCE SHALL THE

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ISSUED FOR BIDDING NOT FOR CONSTRUCTION 01/23/2024

NJ PROFESSIONAL ENGINEER
NO. GE 45801

DATE:________

no.	by	description	date
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revisions

CAPE MAY
BOARDWALK BATHROOMS
702 BEACH AVENUE
CAPE MAY, NJ

project title

HVAC SPECIFICATION SHEET

drawing name

scale AS NOTED

date 01/23/24

drawn by EH

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PIN COMPRESS THE LINER MORE THAN 1/8" RELATIVE TO THE NOMINAL THICKNESS OF THE INSULATION.

C. ALL EXPOSED EDGES OF THE DUCT LINER SHALL BE COATED WITH THE FACTORY APPLIED EDGE COATING OR AN ADHESIVE WHICH CONFORMS TO ASTM C 916.

D. WHEN DUCT LINING IS APPLIED WITH AN ADHESIVE, THE ADHESIVE SHALL BE APPLIED TO THE SHEET METAL WITH A 90% MINIMUM COVERAGE. ALL EXPOSED DUCT LINER EDGES NOT COATED BY THE MANUFACTURER SHALL BE COATED WITH THE SAME ADHESIVE. ALL RIPS AND TEARS SHALL BE REPAIRED USING THIS SAME ADHESIVE.

E. TRANSVERSE JOINTS SHALL BE FIRMLY BUTTED WITH NO GAPS AND COATED WITH ADHESIVE. LONGITUDINAL CORNER JOINTS SHALL BE OVERLAPPED AND COMPRESSED.

F. WHEN AIR VELOCITIES ARE 4000 TO 6000 FPM, METAL NOSING SHALL BE APPLIED TO ALL UPSTREAM TRANSVERSE EDGES TO ADDITIONALLY SECURE THE INSULATION.

3. FLEXIBLE FIBER GLASS BLANKET

A. INSTALL DUCT WRAP USING MANUFACTURER'S STRETCH-OUT TABLES TO OBTAIN SPECIFIED R-VALUE USING A MAXIMUM COMPRESSION OF 25%.

B. INSTALLED R-VALUE SHALL BE PER ASHRAE 90.1; UCC CODE; OR OTHER DESIGN CRITERIA.

C. FIRMLY BUTT ALL JOINTS.

D. THE LONGITUDINAL SEAM OF THE VAPOR RETARDER MUST BE OVERLAPPED A MINIMUM OF 2 INCHES. A 2-INCH TAB SHOULD BE PROVIDED ON DUCT WRAP FOR THE CIRCUMFERENTIAL SEAM.

E. WHERE VAPOR RETARDER PERFORMANCE IS REQUIRED, ALL PENETRATIONS AND DAMAGE TO THE FACING SHALL BE REPAIRED USING PRESSURE-SENSITIVE TAPE MATCHING THE FACING, OR MASTIC PRIOR TO SYSTEM STARTUP. PRESSURE-SENSITIVE TAPES SHALL BE A MINIMUM 3 INCHES WIDE AND SHALL BE APPLIED WITH MOVING PRESSURE USING A SQUEEGEE OR OTHER APPROPRIATE SEALING TOOL. CLOSURE SHALL HAVE A 25/50 FLAME SPREAD/SMOKE DEVELOPED RATING PER UL 723.

F. DUCT WRAP SHALL BE ADDITIONALLY SECURED TO THE BOTTOM OF RECTANGULAR DUCTWORK OVER 24 INCHES WIDE USING MECHANICAL FASTENERS ON 18-INCH CENTERS. CARE SHOULD BE EXERCISED TO AVOID OVER-COMPRESSION OF THE INSULATION DURING INSTALLATION. UNFACED DUCT WRAP SHALL BE OVERLAPPED A MINIMUM OF 2 INCHES AND FASTENED USING 4-INCH TO 6-INCH NAILS OR SKEWERS SPACED 4 INCHES APART, OR SECURED WITH A WIRE/BANDING SYSTEM. CARE SHOULD BE EXERCISED TO AVOID DAMAGE TO THE DUCT WRAP.

4. ROUND DUCTWORK - PIPE & TANK INSULATION

A. APPLY ON CLEAN, DRY SURFACES.

B. CUT TO APPROPRIATE LENGTH USING MANUFACTURERS' STRETCH-OUT GUIDE FOR THE SPECIFIC DUCT SIZE. ADD AN ADDITIONAL 2 INCHES (51 MM) TO 4 INCHES (102 MM) FOR A STAPLE FLAP.

C. WRAP AROUND THE DUCT TO ENSURE PROPER FIT. STAPLE THE LAP ON 3 INCH (76 MM) CENTERS WITH OUTWARD CLINCHING STAPLES.

D. ENDS SHALL BE FIRMLY BUTTED AND SECURED WITH MATCHING BUTT STRIP MATERIAL AT EACH JOINT.

E. ON BELOW AMBIENT DUCTWORK, APPROPRIATE UL APPROVED VAPOR RETARDER SHALL BE APPLIED TO ALL LONGITUDINAL AND CIRCUMFERENTIAL JOINTS BEFORE APPLICATION OF BUTT STRIP MATERIAL.

5. FIBER GLASS DUCTWORK

A. DUCTWORK SHALL BE FABRICATED AND INSTALLED IN STRICT ACCORDANCE WITH THE LATEST EDITION OF NAIMA'S "FIBROUS GLASS DUCT CONSTRUCTION STANDARD" AND MANUFACTURER'S RECOMMENDATIONS.

B. CLOSURE SYSTEM SHALL BE UL 181 TESTED AND LISTED: PRESSURE-SENSITIVE ALUMINUM FOIL TAPES: UL 181 PART I (MARKED UL 181 A-P). HEAT SEALABLE CLOSURES: UL 181 PART II (MARKED UL 181 A-H). MASTICS: UL 181 PART III (MARKED UL 181 A-M) WITH 3-INCH WIDE GLASS FABRIC.

C. ALL LONGITUDINAL AND TRANSVERSE JOINTS HAVING A 1½" STAPLE FLAP SHALL BE SECURED WITH OUTWARD-CINCHING STAPLES ON APPROXIMATE 2-INCH CENTERS AND SEALED WITH APPROVED CLOSURE SYSTEM.

D. TRANSVERSE SHIPLAP JOINTS NOT HAVING STAPLES FLAPS, OR TRANSVERSE BUTT JOINTS SHALL BE SECURED WITH 8-INCH LONG CROSS TABS RUNNING PERPENDICULAR TO THE JOINT SEAM ON 12-INCH CENTERS. CROSS TABS SHALL BE MADE FROM AN APPROVED CLOSURE TAPE. THE SEAM OF THE JOINT SHALL THEN BE SEALED WITH AN APPROVED CLOSURE SYSTEM.

E. DUCT SECTIONS SHALL BE ADDITIONALLY REINFORCED PER NAIMA'S AND MANUFACTURER'S RECOMMENDATIONS WHEN NECESSARY. REINFORCEMENT IS DEPENDENT ON DUCT WIDTH AND OPERATING PRESSURE.

F. DUCTWORK SHALL BE SUSPENDED AND SUPPORTED AS REQUIRED ON STRAIGHT RUNS, AT ALL TURNS, AND AT TRANSITIONS TO MAINTAIN PROPER ALIGNMENT. HANGERS AND SUPPORTS SHALL BE IN STRICT ACCORDANCE WITH NAIMA'S AND MANUFACTURER'S RECOMMENDATIONS.

11. PIPING INSULATION

A. INSULATE ALL PIPING IN ACCORDANCE WITH INSULATION SCHEDULE EXCEPT AS OTHERWISE NOTED.

INSULATION SCHEDULE - PIPING

1. SERVICE LOW TEMP 40F TO 100F
   a. THICKNESS UP TO 4" PIPE SHALL BE 1-1/2"
   INSULATION MATERIAL TYPE P-1 WITH A VAPORSEAL FINISH.
2. SERVICE - FITTINGS & VALVES LOW TEMP 40 TO 100 F
   a. THICKNESS UP TO 4" PIPE SHALL BE 1-1/2"
   INSULATION MATERIAL TYPE P-2 WITH A F-1 VAPORSEAL FINISH.
3. REFRIGERANT LIQUID SUCTION LINES
   a. THICKNESS ALL PIPE SHALL BE 1/2"
   INSULATION MATERIAL TYPE P-4 WITH A VAPORSEAL FINISH.
4. PIPING, FITTINGS & VALVES MEDIUM TEMP 100 TO 200 F
   a. THICKNESS UP TO 4" PIPE SHALL BE 2"
   INSULATION MATERIAL TYPE P-3 WITH A VAPORSEAL FINISH.
5. HOT WATER
   a. THICKNESS UP TO 4" PIPE SHALL BE 2"
   INSULATION MATERIAL TYPE P-3 WITH A VAPORSEAL FINISH.
6. STEAM
   a. THICKNESS UP TO 2" PIPE SHALL BE 2-1/2"
   INSULATION MATERIAL TYPE P-2 WITH AN F-8 FINISH.
7. STEAM
   a. THICKNESS GREATER THAN 2" PIPE SHALL BE 3" INSULATION MATERIAL TYPE P-2 WITH AN F-6 FINISH.

12. PIPING, VALVES AND FITTINGS TO BE INSULATED

A. LOW/MED/HIGH TEMPERATURE PIPING SYSTEMS INCLUDING:

1. CONDENSATE DRAINAGE
2. CHILLED WATER
3. CONDENSER WATER
4. HOT WATER
5. STEAM

B. MATERIAL:

1. TYPE P-1: MINIMUM 4 LB DENSITY MOLDED FIBERGLASS, MAXIMUM 0.23 K-FACTOR AT 75 F MEAN TEMPERATURE WITH FACTORY-APPLIED FIRE-RETARDANT FOIL-SKRIM-KRAFT FACING. ALL SERVICE JACKET. SIMILAR TO OWENS-CORNING 650 ASJ.

2. TYPE P-2: MINIMUM 4 LB DENSITY MOLDED FIBERGLASS FITTING, MAXIMUM 0.23 K-FACTOR AT 75 F MEAN TEMPERATURE SIMILAR TO EPOLUX HAMFAB MOLDED FITTINGS.

3. TYPE P-3: MINIMUM 1 LB DENSITY FIBERGLASS FITTING INSERTS, MAXIMUM 0.28 K-FACTOR AT 75 F MEAN TEMPERATURE SIMILAR TO MANVILLE HI-LO TEMP INSULATION INSERTS.

4. TYPE P-4: MINIMUM 6 LB MOLDED FOAMED PLASTIC. MAXIMUM 0.27 K-FACTOR AT 75 F MEAN TEMPERATURE. MAXIMUM 0.08 PERMEANCE. SIMILAR TO ARMSTRONG ARMAFLEX II.

C. FINISH:

1. TYPE F-1: FITTING COVER, MOLDED WHITE PVC JACKET, UL CLASS 1, MAXIMUM PERMEANCE 0.05 SIMILAR TO MANVILLE ZESTRON.

2. TYPE F-2: WHITE VAPOR BARRIER COATING WITH 10X10 OR 20X20 MESH WHITE GLASS, POLYESTER OR NYLON CLOTH REINFORCING MEMBRANE, MINIMUM 31 MIL DRY FILM THICKNESS, SIMILAR TO FOSTER TITE-FIT, UL LABEL.

3. TYPE F-4: ALUMINUM JACKETING WITH MINIMUM 0.016 IN. WALL THICKNESS AND LONGITUDINAL JOINTS WITH LOCK SEAMS.

4. TYPE F-6: WHITE FINISHING AND INSULATING CEMENT APPLIED OVER HEXAGONAL WIRE MESH. CEMENT SIMILAR TO KEENE SUPERSLICK.

D. OUTDOOR PIPING:

1. FOR ALL PIPING, FITTINGS AND VALVES LOCATED OUTDOORS, INCREASE SCHEDULED INSULATION THICKNESS BY A MINIMUM OF 1 IN. AND PROVIDE F-4 FINISH. PROVIDE VAPORSEAL ON ALL OUTDOOR PIPES, VALVES AND FITTINGS SUBJECT TO CONDENSATION.

E. E.INSTALLATION:

1. BEFORE APPLYING INSULATION ALL PRESSURE AND LEAK TESTS SHALL BE COMPLETED AND APPROVED.

2. ALL INSULATION SHALL BE BUTTED FIRMLY TOGETHER. PROVIDE 2 IN. LAMP STRIPS AT ALL SEAMS SECURED WITH ADHESIVE. USE VAPOR BARRIER TAPE AND VAPORSEAL ADHESIVE WHERE REQUIRED. STAPLES NOT PERMITTED. REFRIGERANT PIPING INSULATION SHALL HAVE MITERED FITTINGS.

3. ALL INSULATION AND VAPOR BARRIERS SHALL BE CONTINUOUS PASSING THROUGH SLEEVES, HANGERS, ETC., OR OTHER OPENINGS. PROVIDE SADDLES OR SHIELDS FOR PROTECTION.

4. INSULATION FOR STRAINERS OR OTHER FITTINGS OR ACCESSORIES REQUIRING SERVICING OR INSPECTION SHALL HAVE INSULATION REMOVABLE AND REPLACEABLE WITHOUT DAMAGE.

13. VIBRATION ISOLATION

A. GENERAL:

1. PROVIDE ISOLATION FOR EQUIPMENT, PIPING AND DUCTWORK.

2. INSTALL IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS.

3. PROVIDE LEVELING DEVICES AND APPROVED RESILIENT RESTRAINING DEVICES AS REQUIRED TO LIMIT EQUIPMENT AND PIPING MOTION IN EXCESS OF 1/4 IN.

4. ACCEPTABLE MANUFACTURERS:
   a MASON INDUSTRIES, INC.
   b VIBRATION ELIMINATOR CO.
   c KORFUND DYNAMICS CORP.

B. CEILING-HUNG FANS AND EQUIPMENT:

1. PROVIDE SPRING HANGER ROD ISOLATORS. STEEL COMPRESSION SPRING AND NEOPRENE SOUND PAD WITHIN A STEEL RETAINER BOX. SIMILAR TO MASON TYPE PCHS. 1 IN. MINIMUM STATIC DEFLECTION. 1/2 IN. MINIMUM.

2. RESERVED DEFLECTION. FACTORY-PRELOADED TO 75% OF RATED LOAD. PROVIDE SUPPLEMENTAL STEEL AS REQUIRED WHERE

3. EQUIPMENT OR STRUCTURE CANNOT SUPPORT POINT LOADS.

C. FLOOR MOUNTED EQUIPMENT HAVING INTERNAL ISOLATION:

1. PROVIDE 5/16 IN.-THICK NEOPRENE ACOUSTICAL BASE PADS OF RIBBED OR WAFFLE CONSTRUCTION. SIMILAR TO MASON TYPE W. 50 PSI MAXIMUM LOADING. PROVIDE STEEL BEARING.

2. PLATE TO DISTRIBUTE LOAD WHERE REQUIRED.

14. PIPING - GENERAL REQUIREMENTS

A. COMPLETE WITH: PIPE, FITTINGS, VALVES, STRAINERS, MOTORIZED VALVE OPERATORS, STRAINERS, HANGERS, SUPPORTS, GUIDE, SLEEVES, AND ACCESSORIES.

B. ALL ITEMS SHALL BE FURNISHED AND INSTALLED IN ACCORDANCE WITH THE LATEST EDITIONS OF THE FOLLOWING CODES AND STANDARDS:

1. AMERICAN SOCIETY OF MECHANICAL ENGINEERS (ASME).

2. AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM).

3. AMERICAN NATIONAL STANDARDS INSTITUTE (ANSI). MANUFACTURERS STANDARDIZATION SOCIETY OF THE

4. VALVE AND FITTING INDUSTRY (MSS).

C. ALL PRESSURIZED PIPING TO BE TESTED HYDROSTATICALLY TO 150PSI OR 150% OF OPERATING PRESSURE, WHICHEVER IS GREATER, BUT NEVER EXCEED TEST PRESSURE ANSI B16.1 BASIS. TEST DURATION TO BE 2 HOURS WITH NO PRESSURE CHANGE CORRECTED FOR TEMPERATURE CHANGE. REPAIR OR REPLACE LEAKS OR DEFECTS WITHOUT ADDITIONAL COST.

D. PROVIDE DIELECTRIC FITTINGS WHERE DISSIMILAR METALS ARE TO BE JOINED.

E. PIPE SUPPORTS:

1. PROVIDE ADEQUATE SUPPORT FOR PIPE AND CONTENTS TO PREVENT SAGGING, VIBRATION, OR SWAYING AND ALLOW FOR EXPANSION AND CONTRACTION. PROVIDE SUPPLEMENTAL STEEL AS REQUIRED WHERE STRUCTURE CANNOT SUPPORT POINT LOADS.

2. HORIZONTAL PIPING TO BE SUPPORTED BY FORGED STEEL ADJUSTABLE CLEVIS TYPE HANGER. MAXIMUM SPACING AS FOLLOWS:
   a. STEEL 1 IN. AND SMALLER: 7 FT.
   b. STEEL 1-1/4 IN. AND LARGER: 10 FT.
   c. COPPER 3 IN. AND SMALLER: 7 FT
   d. ADDITIONAL SUPPORTS AT CHANGES IN DIRECTION, RUNOUTS, AND CONCENTRATED LOADS DUE TO VALVES, ETC.

3. VERTICAL PIPING:
   a. BASE ELBOW SUPPORT WITH BEARING PLATE ON STRUCTURAL SUPPORT.
   b. GUIDES AT EVERY SECOND FLOOR (SPACING NOT TO EXCEED 25 FT).
   c. TOP SUPPORT HANGER OR SADDLE IN HORIZONTAL CONNECTION WITH PROVISIONS FOR EXPANSION.
   d. INTERMEDIATE STEEL RISER CLAMP SUPPORT BOLTED AND WELDED TO PIPE BEARING ON STRUCTURAL STEEL OR BEARING PLATE AT FLOOR.

15. CONDENSATE DRAIN PIPING

A. PIPE: ASTM B88, HARD DRAWN COPPER TUBING TYPE "L".

B. FITTINGS: SOLDERED JOINT FITTINGS, 95/5 SOLDER.

C. PITCH AND DRAIN TO NEAREST AVAILABLE DRAIN, EXCEPT AS NOTED:

1. 1 IN. IN 4 FT PREFERRED.

2. 1 IN. IN 8 FT MINIMUM.

16. REFRIGERANT PIPING

A. REFRIGERANT PIPING

1. PIPE: COPPER TYPE ACR IN ACCORDANCE WITH ASTM B280, NITROGEN CHANGE AND CAPPED. FITTINGS: WROUGHT COPPER WITH SILVER BRAZING

2. ALLOY SOLDER SIMILAR TO HANDY AND HARMAN EASY-FLO.

3. INSULATE ALL REFRIGERANT PIPING.

17. NOISE CRITERIA

A. ALL AIR DISTRIBUTION SYSTEMS, REGISTERS AND RETURNS MUST BE NC 35 OR LESS.

18. DAMPERS

A. MAXIMUM DAMPER LEAKAGE FOR NONMOTORIZED SHALL BE 20CFM PER SQUARE FOOT, MOTORIZED SHALL BE 4CFM PER SQUARE FOOT. IF THE DAMPER IS SERVING AN AREA MAINTAINING A TEMPERATURE LESS THAN 50 DEGREES THE DAMPER SHALL BE MOTORIZED, HAVE A 0CFM(BUBBLE TIGHT) LEAKAGE INSULATED DAMPER WITH SILICONE AND HEATED SEALS.

B. ALL OUTDOOR AIR INTAKE AND EXHAUST SYSTEMS SHALL BE EQUIPPED WITH MOTORIZED DAMPERS.

19. FRACTIONAL HORSEPOWER FAN MOTORS

A. MOTORS FOR FANS THAT ARE 1/12 HP OR GREATER AND LESS THAN 1 HP SHALL BE ELECTRONICALLY-COMMUTATED MOTORS OR SHALL HAVE A MINIMUM MOTOR EFFICIENCY OF 70% WHEN RATED IN ACCORDANCE WITH DOE 10 CFR 431. THESE MOTORS SHALL ALSO HAVE THE MEANS TO ADJUST MOTOR SPEED FOR EITHER BALANCING OR REMOTE CONTROL. BELTDRIVEN FANS MAY USE SHEAVE ADJUSTMENTS FOR AIRFLOW BALANCING IN LIEU OF A VARYING MOTOR SPEED.

EXCEPTIONS:

1. MOTORS IN THE AIRSTREAM WITHIN FAN-COILS AND TERMINAL UNITS THAT OPERATE ONLY WHEN PROVIDING HEATING TO THE SPACE SERVE

20. CONTROLS

A. UNLESS OTHERWISE NOTED, EACH THERMOSTAT OR TEMPERATURE SENSOR SHALL CONTROL NO MORE THAN 25,000 SQURE FEET OF SPACE AND SHALL BE LOCATED IN THE ZONE IT IS CONTROLLING.

B. UNLESS OTHERWISE NOTED, EACH ZONE THERMOSTATIC CONTROL FOR BOTH HEATING AND COOLING SHALL HAVE A DEAD BAND CAPABILITY OF AT LEAST 5 DEGREES F.

C. CONTROLS SHALL HAVE SETPOINT OVERLAP RESTRICTION TO PREVENT HEATING SETPOINT FROM EXCEEDING THE COOLING SETPOINT MINUS ANY APPLICABLE PROPOTIONAL BAND.

D. CONTROLS SHALL HAVE THE ABILITY TO START AND STOP UNDER DIFFERENT TIME SCHEDULES FOR SEVEN DIFFERENT DAY TYPES PER WEEK AND BE CAPABLE OF RETAINING PROGRAMMING AND TIME SETTING DURING A POWER LOSS PERIOD OF AT LEAST TEN HOURS, AND INCLUDE AN ACCESSIBLE MANUAL OVERRIDE, OR EQUIVALENT FUNCTION, THAT ALLOWS TEMPORARY OPERATION OF THE SYSTEM FOR UP TO TWO HOURS.

E. SETBACK CONTROLS: HEATING ADJUSTABLE AT LEAST 10 DEGREES F BELOW SETPOINT, COOLING ADJUSTABLE AT LEAST 5 DEGREES ABOVE SETPOINT OR TO PREVENT HIGH SPACE HUMIDITY LEVELS.

F. OPTIMUM START CONTROLS THE CONTROL ALGORITHM SHALL, AS A MINIMUM, BE A FUNCTION OF THE DIFFERENCE BETWEEN SPACE TEMPERATURE AND OCCUPIED SETPOINT, THE OUTDOOR TEMPERATURE, AND THE AMOUNT OF TIME PRIOR TO SCHEDULED OCCUPANCY. MASS RADIANT FLOOR SLAB SYSTEMS SHALL INCORPORATE FLOOR TEMPERATURE INTO THE OPTIMUM START ALGORITHM.

G. SHUTOFF DAMPER CONTROLS - AUTOMATICALLY SHUT WHEN THE SYSTEMS OR SPACES SERVED ARE NOT IN USE, DURING PREOCCUPANCY WARMUP, COOLDOWN, AND SETBACK, EXCEPT WHEN VENTILATION REDUCES ENERGY COSTS OR WHEN VENTILATION MUST BE SUPPLIED TO MEET CODE REQUIREMENTS.

H. UNLESS OTHERWISE NOTED, VENTILATION FANS SHALL HAVE AUTOMATIC CONTROLS TO SHUT OFF WHEN NOT REQUIRED EXCEPT FOR SYSTEMS INTENDED TO RUN CONTINUOUSLY.

I. DEMAND CONTROL VENTILATION - REQUIRED FOR SPACES LARGER THAN 500 FEET SQUARE AND WITH A DESIGN OCCUPANCY FOR VENTILATION OF GREATER THAN OR EQUAL TO 25 PEOPLE PER 1000 FT2 OF FLOOR AREA AND SERVED BY SYSTEMS WITH ONE OR MORE OF THE FOLLOWING:

A. AIR-SIDE ECONOMIZER
B. AUTOMATIC MODULATING CONTROL OF OUTDOOR AIR DAMPER
C. DESIGN OUTDOOR AIRFLOW GREATER THAN 3000 CFM.

J. HEATING AND/OR AIR CURTAIN HEAT IN VESTIBULES- IF PROVIDED THE VESTIBULE SHALL BE TEMPERATURE CONTROLLED TO A MAXIMUM SETPOINT OF 60 DEGREES F AND SHUT OFF WHEN OUTDOOR AIR TEMPERATURES ARE ABOVE 45 DEGREES F.

K. DIRECT DIGITAL CONTROL(DDC) SHALL BE CAPABLE OF ALL OF THE FOLLOWING:

A. MONITORING ZONE AND SYSTEM DEMAND FOR FAN PRESSURE, PUMP PRESSURE, HEATING, AND COOLING

B. TRANSFERRING ZONE AND SYSTEM DEMAND INFORMATION FROM ZONES TO AIR DISTRIBUTION SYSTEM CONTROLLERS AND FROM AIR DISTRIBUTION SYSTEMS TO HEATING AND COOLING PLANT CONTROLLERS

C. AUTOMATICALLY DETECTING THOSE ZONES AND SYSTEMS THAT MAY BE EXCESSIVELY DRIVING THE RESET LOGIC AND GENERATE AN ALARM OR OTHER INDICATION TO THE SYSTEM OPERATOR

D. READILY ALLOWING OPERATOR REMOVAL OF ZONE(S) FROM THE RESET ALGORITHM

DDC DISPLAY - THE DDC SYSTEM SHALL BE CAPABLE OF TRENDING AND GRAPHICALLY DISPLAYING INPUT AND OUTPUT POINTS.

L. AIR ECONOMIZER SYSTEM(S) SHALL BE CAPABLE OF MODULATING OUTDOOR AIR AND RETURN AIR DAMPERS TO PROVIDE UP TO 100% OF THE DESIGN SUPPLY AIR QUANTITY AS OUTDOOR AIR FOR COOLING.

CONTROL SIGNAL. ECONOMIZER DAMPERS SHALL BE CAPABLE OF BEING SEQUENCED WITH THE MECHANICAL COOLING EQUIPMENT AND SHALL NOT BE CONTROLLED BY ONLY MIXED-AIR TEMPERATURE.

EXCEPTION: THE USE OF MIXED-AIR TEMPERATURE LIMIT CONTROL SHALL BE PERMITTED FOR SYSTEMS CONTROLLED FROM SPACE TEMPERATURE (SUCH AS SINGLE-ZONE SYSTEMS).

HIGH-LIMIT SHUTOFF. ALL AIR ECONOMIZERS SHALL BE CAPABLE OF AUTOMATICALLY REDUCING OUTDOOR AIR INTAKE TO THE DESIGN MINIMUM OUTDOOR AIR QUANTITY WHEN OUTDOOR AIR INTAKE WILL NO LONGER REDUCE COOLING ENERGY USAGE. HIGH-LIMIT SHUTOFF CONTROL TYPES AND ASSOCIATED SETPOINTS FOR SPECIFIC CLIMATE ZONES SHALL COMPLY WITH ASHRAE 90.1-2016 CLIMATE ZONE 4A.

DAMPERS. RETURN, EXHAUST/RELIEF, AND OUTDOOR AIR DAMPERS SHALL MEET THE REQUIREMENTS LISTED IN THE DAMPER SECTION OF THE SPECIFICATION.

RELIEF OF EXCESS OUTDOOR AIR. SYSTEMS SHALL PROVIDE A MEANS TO RELIEVE EXCESS OUTDOOR AIR DURING AIR ECONOMIZER OPERATION TO PREVENT OVERPRESSURIZING THE BUILDING. THE RELIEF AIR OUTLET SHALL BE LOCATED SO AS TO AVOID RECIRCULATION INTO THE BUILDING.

SENSOR ACCURACY. OUTDOOR AIR, RETURN AIR, MIXED AIR, AND SUPPLY AIR SENSORS SHALL BE CALIBRATED WITHIN THE FOLLOWING ACCURACIES:

A. DRY-BULB AND WET-BULB TEMPERATURES SHALL BE ACCURATE TO ±2°F OVER THE RANGE OF 40°F TO 80°F.

B. ENTHALPY AND THE VALUE OF A DIFFERENTIAL ENTHALPY SENSOR SHALL BE ACCURATE TO ±3 BTU/LB OVER THE RANGE OF 20 TO 36 BTU/LB.

C. RELATIVE HUMIDITY SHALL BE ACCURATE TO ±5% OVER THE RANGE OF 20% TO 80% RH

HEATING SYSTEM IMPACT. THE ECONOMZIER CONTROLS SHALL BE SUCH THAT ECONOMIZER OPERATION DOES NOT INCREASE THE BULDING HEATING ENERGY USE DURING NORMAL OPERATION UNLESS VAVS ARE USED ON THE PROJECT AND THE VAV SYSTEM(S) SHALL CAUSE ZONE-LEVEL HEATING TO INCREASE DUE TO A REDUCTION IN SUPPLY AIR TEMPERATURE.

M. ZONE THERMOSTATIC CONTROLS SHALL PREVENT

A. REHEATING;

B. RECOOLING;

C. MIXING OR SIMULTANEOUSLY SUPPLYING AIR THAT HAS BEEN PREVIOUSLY MECHANICALLY HEATED AND AIR THAT HAS BEEN PREVIOUSLY COOLED, EITHER BY MECHANICAL COOLING OR BY ECONOMIZER SYSTEMS; AND

D. OTHER SIMULTANEOUS OPERATION OF HEATING AND COOLING SYSTEMS TO THE SAME ZONE

N. CONTROLS SHALL PREVENT REHEATING, MIXING OF HOT AND COLD AIRSTREAMS, OR OTHER MEANS OF SIMULTANEOUS HEATING AND COOLING OF THE SAME AIRSTREAM

O. FAN CONTROL - FANS IN MECHANICAL COOLING SYSTEM SHALL BE MODULTING TYPE AND MODULATE BASED UPON SPACE TEMPERATURE AND/OR VENTILATION REQUIREMENTS.

P. DOOR SWITCHES - PROVIDE DOOR SWITCHES AT ALL OUTSIDE DOORS. UPON A DOOR BEING LEFT OPEN FOLLOW SEQUENCE BELOW:

1. DISABLE MECHANICAL HEATING OR RESET THE HEATING SETPOINT TO 55°F OR LOWER WITHIN FIVE MINUTES OF THE DOOR OPENING AND

2. DISABLE MECHANICAL COOLING OR RESET THE COOLING SETPOINT TO 90°F OR GREATER WITHIN FIVE MINUTES OF THE DOOR OPENING. MECHANICAL COOLING SHALL REMAIN ENABLED IF OUTDOOR AIR TEMPERATURE IS BELOW SPACE TEMPERATURE.

EXCEPTIONS:
1. BUILDING ENTRIES WITH AUTOMATIC CLOSING DEVICES
2. ANY SPACE WITHOUT A THERMOSTAT
3. ALTERATIONS TO EXISTING BUILDINGS
4. LOADING DOCKS

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01/23/2024

NJ PROFESSIONAL ENGINEER
NO. GE 45801

DATE:_____

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		ISSUED FOR BIDDING	01/23/2024

revisions

CAPE MAY BOARDWALK BATHROOMS

702 BEACH AVENUE

CAPE MAY, NJ

project title

HVAC SPECIFICATION SHEET

drawing name

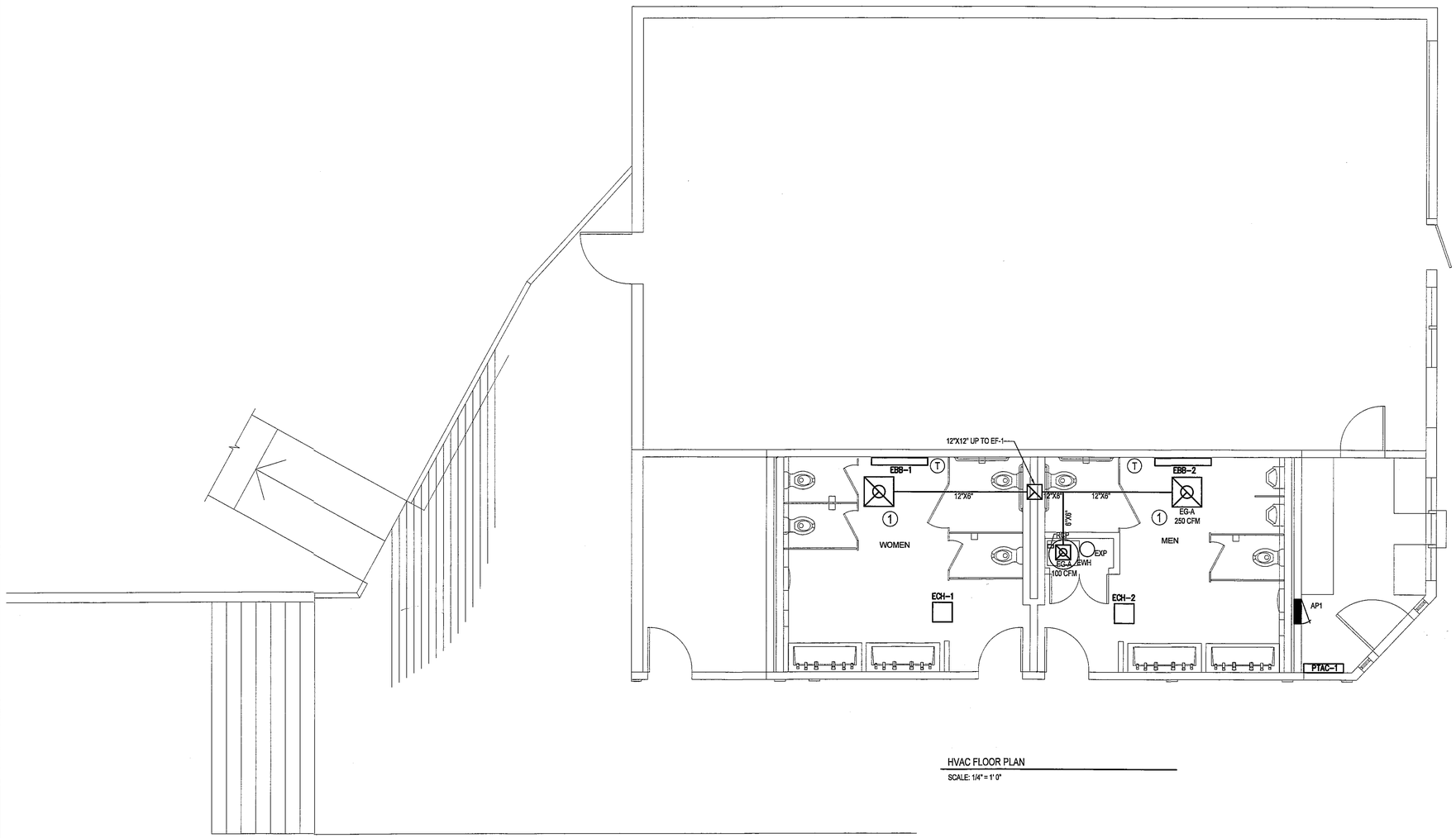
scale AS NOTED

date 01/23/24

drawn by EH

project no. 220121

drawing no. M1.3



HVAC FLOOR PLAN

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

GENERAL NOTES:

1. THE EXACT MOUNTING HEIGHTS AND LOCATIONS OF ALL HVAC EQUIPMENT SHALL BE FIELD VERIFIED AND COORDINATED WITH ALL OTHER MECHANICAL, ELECTRICAL, ARCHITECTURAL AND STRUCTURAL SYSTEMS.

2. VERIFY ALL EQUIPMENT VOLTAGES WITH THE ELECTRICAL CONTRACTOR PRIOR TO ORDERING EQUIPMENT.

3. PROVIDE DISCONNECT SWITCHES FOR ALL HVAC EQUIPMENT INCLUDING WEATHERPROOF DISCONNECT AS REQUIRED.

4. PROVIDE PHASE LOSS PROTECTION FOR ALL POLY-PHASE MOTOR DEVICES.

5. THE FINAL LOCATION OF AIR DEVICES MUST BE COORDINATED WITH THE REFLECTED CEILING PLAN AND ALL OTHER MECHANICAL, ELECTRICAL, FIRE PROTECTION, ARCHITECTURAL, AND STRUCTURAL SYSTEMS.

6. PROVIDE FLEXIBLE CONNECTIONS AT ALL DUCT CONNECTIONS TO VIBRATING EQUIPMENT. THESE CONNECTIONS SHALL BE INSTALLED IN CLOSE PROXIMITY TO SUCH EQUIPMENT.

7. ALL CEILING MOUNTED EQUIPMENT MUST BE SUPPORTED DIRECTLY FROM BUILDING STRUCTURE WITH COMBINATION SPRING AND NEOPRENE-IN-SHEAR HANGERS AND ROD. PROVIDE SUPPLEMENTARY STEEL AS REQUIRED TO ADEQUATELY SUPPORT THE LOAD.

8. ALL ROOFTOP HVAC EQUIPMENT SHALL BE INSTALLED SUFFICIENTLY AWAY FROM EDGE OF ROOF SO AS TO ALLOW FOR THE INSTALLATION OF PROPER FLASHING TO ENSURE A WEATHER TIGHT SEAL. IN ADDITION, ADEQUATE CLEARANCES SHALL BE PROVIDED FOR CLEANING AND MAINTENANCE REQUIREMENTS. THE FINAL LOCATION OF ALL ROOFTOP UNITS MUST ALSO COMPLY WITH ALL OSHA SAFETY REQUIREMENTS. WHEN MINIMUM REQUIRED DISTANCE CAN NOT BE MAINTAINED, IT SHALL BE THE RESPONSIBILITY OF THE GENERAL CONTRACTOR TO PROVIDE AND INSTALL CODE COMPLIANT SAFETY RAILS.

9. ALL FRESH AIR INTAKES INCLUDING GOOSENECKS, LOUVERS OR ROOF MOUNTED INTAKE HOODS REQUIRE INSECT SCREENS.

DRAWING NOTES:

(1) COORDINATE FINAL DIFFUSER LOCATIONS WITH LIGHTING.

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01/23/2024

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NO. GE 45801

DATE:_____

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		ISSUED FOR BIDDING	01/23/2024

revisions

CAPE MAY BOARDWALK BATHROOMS

702 BEACH AVENUE

CAPE MAY, NJ

project title

HVAC FLOOR PLAN

drawing name

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drawn by EH

project no. 220121

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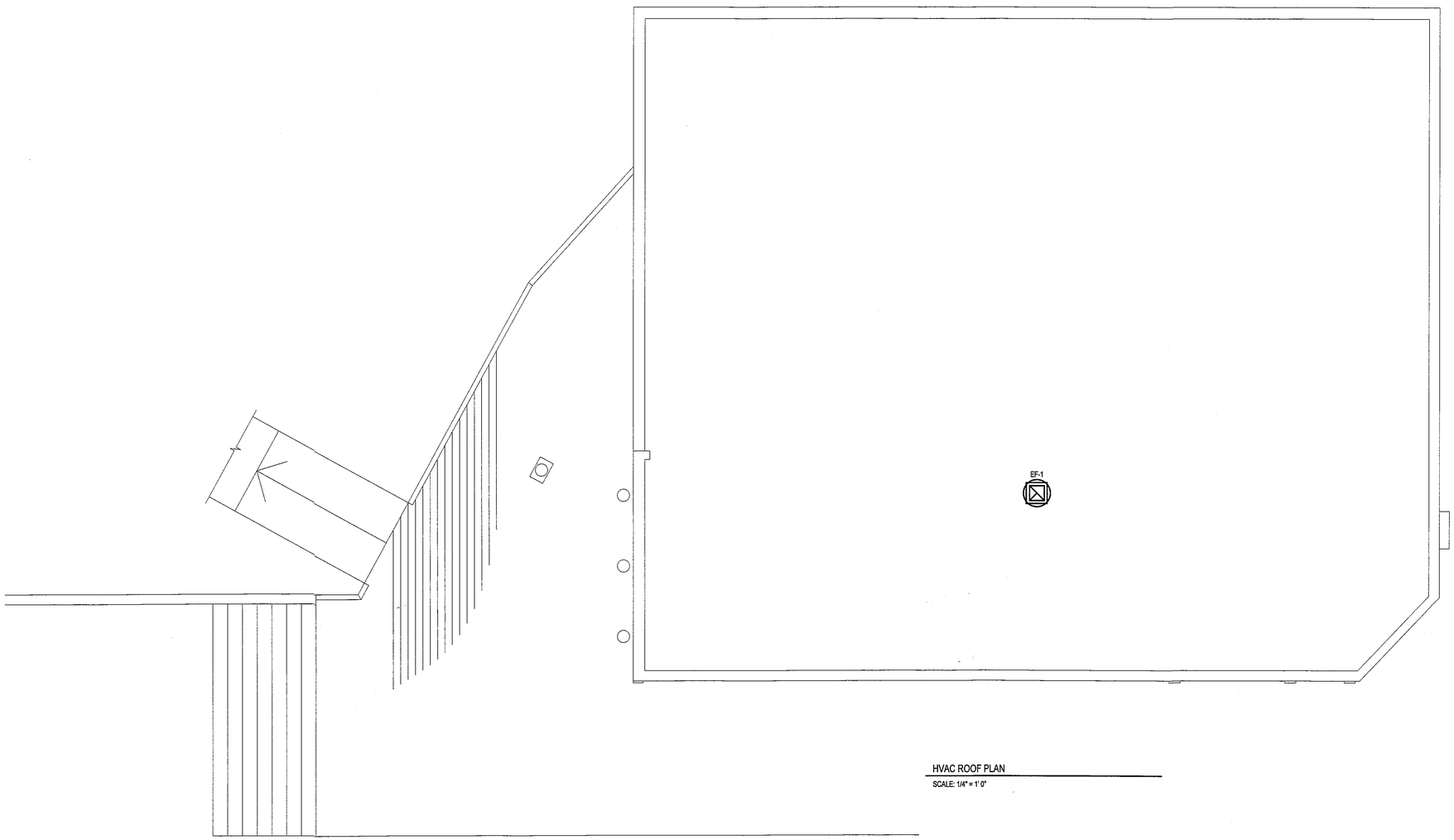

HVAC ROOF PLAN

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

GENERAL NOTES:

1. THE EXACT MOUNTING HEIGHTS AND LOCATIONS OF ALL HVAC EQUIPMENT SHALL BE FIELD VERIFIED AND COORDINATED WITH ALL OTHER MECHANICAL, ELECTRICAL, ARCHITECTURAL AND STRUCTURAL SYSTEMS.

2. VERIFY ALL EQUIPMENT VOLTAGES WITH THE ELECTRICAL CONTRACTOR PRIOR TO ORDERING EQUIPMENT.

3. PROVIDE DISCONNECT SWITCHES FOR ALL HVAC EQUIPMENT INCLUDING WEATHERPROOF DISCONNECT AS REQUIRED.

4. PROVIDE PHASE LOSS PROTECTION FOR ALL POLY-PHASE MOTOR DEVICES.

5. THE FINAL LOCATION OF AIR DEVICES MUST BE COORDINATED WITH THE REFLECTED CEILING PLAN AND ALL OTHER MECHANICAL, ELECTRICAL, FIRE PROTECTION, ARCHITECTURAL, AND STRUCTURAL SYSTEMS.

6. PROVIDE FLEXIBLE CONNECTIONS AT ALL DUCT CONNECTIONS TO VIBRATING EQUIPMENT. THESE CONNECTIONS SHALL BE INSTALLED IN CLOSE PROXIMITY TO SUCH EQUIPMENT.

7. ALL CEILING MOUNTED EQUIPMENT MUST BE SUPPORTED DIRECTLY FROM BUILDING STRUCTURE WITH COMBINATION SPRING AND NEOPRENE-IN-SHEAR HANGERS AND ROD. PROVIDE SUPPLEMENTARY STEEL AS REQUIRED TO ADEQUATELY SUPPORT THE LOAD.

8. ALL ROOFTOP HVAC EQUIPMENT SHALL BE INSTALLED SUFFICIENTLY AWAY FROM EDGE OF ROOF SO AS TO ALLOW FOR THE INSTALLATION OF PROPER FLASHING TO ENSURE A WEATHER TIGHT SEAL. IN ADDITION, ADEQUATE CLEARANCES SHALL BE PROVIDED FOR CLEANING AND MAINTENANCE REQUIREMENTS. THE FINAL LOCATION OF ALL ROOFTOP UNITS MUST ALSO COMPLY WITH ALL OSHA SAFETY REQUIREMENTS. WHEN MINIMUM REQUIRED DISTANCE CAN NOT BE MAINTAINED, IT SHALL BE THE RESPONSIBILITY OF THE GENERAL CONTRACTOR TO PROVIDE AND INSTALL CODE COMPLIANT SAFETY RAILS.

9. ALL FRESH AIR INTAKES INCLUDING GOOSENECKS, LOUVERS OR ROOF MOUNTED INTAKE HOODS REQUIRE INSECT SCREENS.

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project no. 220121

M2.2

drawing no.

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EXHAUST FAN SCHEDULE

TAG	SERVICE	MFR	MODEL	AIR FLOW (CFM)	EXT. SP (IN. WG)	RPM	DRIVE	ELECTRICAL DATA HP	VOLTS	PHASE	FLA	MAX C/B	MOTOR CONTROL	MISCELLANEOUS SECTION WEIGHT (LBS.)	NOTES
EF-1	BATHROOMS/ JANITOR CLOSET	GREENHECK	G-095-VG	600	0.6	1625	DIRECT	0.17	115	1	2.8	15	CONTINUOUS	29	1,2,3,5

NOTES:

1. WEATHERPROOF DISCONNECT SWITCH
2. ROOF CURB
3. BACKDRAFT DAMPER
4. BACKDRAFT DAMPER SPRING CLOSED GRAVITY OPEN FOR SUPPLY FAN USE
5. PROVIDE A CURB AND POSITIVELY ATTACH THE UNIT TO THE STRUCTURE BELOW. COORDINATE WITH THE ARCHITECT AND/OR STRUCTURAL ENGINEER. THE CURB AND UNIT SHALL WITHSTAND THE WIND LOAD AS SHOWN IN THE CODE REVIEW SECTION ON THE HVAC COVERSHEET.
6. PROVIDE WITH MODEL XXX MOTORIZED DAMPER WITH ACTUATOR AND END-SWITCH. INTERLOCK ASSOCIATED EXHAUST FAN WITH END-SWITCH TO START FAN ONCE DAMPER IS PROVED TO BE FULLY OPEN VIA END-SWITCH

N/A - NOT AVAILABLE - OR NOT APPLICABLE

INDOOR AIR HANDLER UNIT SCHEDULE

TAG	SERVICE	MFR	MODEL	FAN SECTION SUPPLY CFM	COOLING DATA GROSS CAP (MBH)	HEATING SECTION FUEL	STAGES	GROSS HEAT CAP (MBH)	ELECTRICAL SECTION VOLTS	PHASE	MCA (COOLING/HEATING)	MAX C/B	MISCELLANEOUS SECTION WEIGHT (LBS.)	EFFICIENCY EER	NOTES
PTAC-1	VESTIBULE	TRANE	PTHE1201UA	320	12	HEAT PUMP	N/A	9.9	208	1	5.1/7.9	15	99	11.2	1,2,3,5

NOTES:

1. TO BE SUPPLIED WITH STANDARD 2" THROWAWAY FILTERS
2. SUPPLY WITH 7-DAY PROGRAMMABLE THERMOSTAT
3. SUPPLY WITH CONDENSATE PUMP, LITTLE GIANT VCMA-15 OR EQUAL PIPED TO NEAREST AVAILABLE DRAIN OR STANDPIPE
4. PROVIDE A SMOKE DUCT DETECTOR FOR FAN SHUTDOWN. COORDINATE WITH THE FIRE ALARM CONTRACTOR.
5. POWERED BY OUTDOOR UNIT

DIFFUSER SCHEDULE

DESIGNATION	SERVICE	DESCRIPTION	OVERALL DIMENSIONS	BASIS OF DESIGN	NOTES
CD-A	SUPPLY	ALUMINUM SQUARE PLAQUE DIFFUSER, FIXED DISCHARGE, OPPOSED BLADE DAMPER	24" X 24"	TITUS OMNI-AA	1 THRU 6
RG-A	RETURN	PERFORATED FACE DIFFUSER, 3/16" HOLES, OPPOSED BLADE DAMPER	48" X 24"	TITUS PAR-AA	1 THRU 6
EG-A	EXHAUST	PERFORATED FACE DIFFUSER, 3/16" HOLES, OPPOSED BLADE DAMPER	SEE DWGS	TITUS PAR-AA	1 THRU 6

NOTES:

1. COORDINATE DIFFUSER MOUNTING TYPE WITH CEILING, DUCT OR WALL TYPE
2. COORDINATE DIFFUSER FINISH WITH OWNER OR OWNER'S REPRESENTATIVE
3. ORIENT DIFFUSER TO DIRECT AIRFLOW AT WINDOW OR WALL AND AVOID DISCHARGING DIRECTLY ON OCCUPANTS
4. MAXIMUM NOISE CRITERION RATING <30
5. MOUNTING FRAME TYPE SHALL BE COORDINATED WITH CEILING CONSTRUCTION TYPE.
6. NECK DIAMETER SHALL BE AS SCHEDULED IN TABLE 1

TABLE 1 - ROUND NECK SIZE SCHEDULE

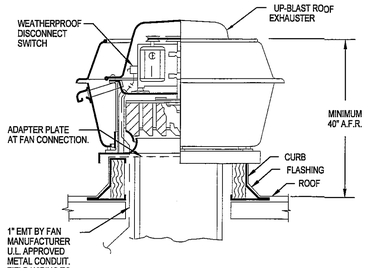
1 TO 150 CFM	- 6" DIAMETER
151 TO 275 CFM	- 8" DIAMETER
276 TO 380 CFM	- 10" DIAMETER
381 TO 500 CFM	- 12" DIAMETER
501 TO 700 CFM	- 14" DIAMETER
701 TO 900 CFM	- 16" DIAMETER

ELECTRIC HEATER SCHEDULE

TAG	SERVICE	MFR	MODEL	CFM	ELECTRICAL DATA KW	BTUH/R	AMPS	MAX C/B	VOLTS	PHASE	CONTROL	MISC. WEIGHT	NOTES
ECH-1	WOMENS RESTROOM	QMARK	CDF558	300	5	17.1	15.8	20	240	1	T'STAT	27	2
ECH-2	MENS RESTROOM	QMARK	CDF558	300	5	17.1	15.8	20	240	1	T'STAT	27	2
EBB-1	WOMENS RESTROOM	QMARK	2544		1	3.41	4.2	4.2	240	1	T'STAT	10	2
EBB-2	MENS RESTROOM	QMARK	2544		1	3.41	4.2	4.2	240	1	T'STAT	10	2

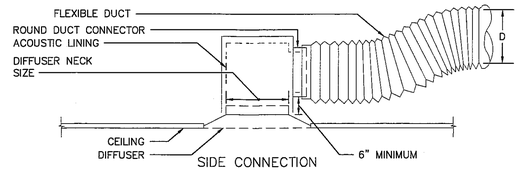
1. INTEGRAL T'STAT
2. REMOTE WALL MOUNTED T'STAT

N/A - NOT AVAILABLE - OR NOT APPLICABLE

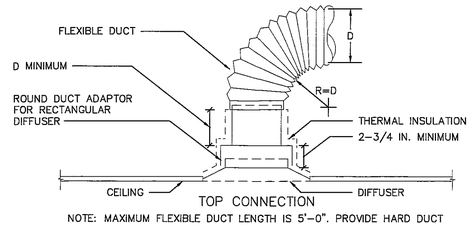


UPBLAST FAN DETAIL

SCALE: NONE



SIDE CONNECTION

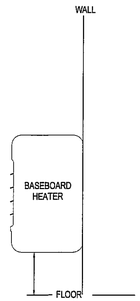


TOP CONNECTION

NOTE: MAXIMUM FLEXIBLE DUCT LENGTH IS 5'-0". PROVIDE HARD DUCT AS REQUIRED TO NOT EXCEED THIS MAXIMUM FLEX DUCT LENGTH

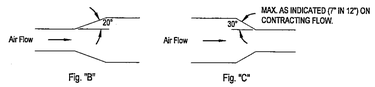
DIFFUSER CONNECTION DETAIL

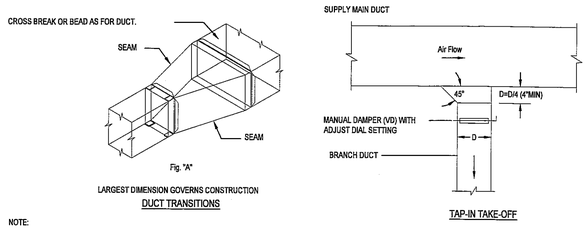
SCALE: NONE



ELECTRIC BASEBOARD DETAIL

SCALE: NONE





NOTE:

1. DUCT TRANSITIONS TYPICAL AFTER EACH TAKE-OFF(S) WHERE CHANGE IN DUCT SIZE IS INDICATED.

DUCT TRANSITION DETAILS

SCALE: NONE

BD engineering

NJ CERTIFICATE OF AUTHORIZATION - 24GA28116100
BD Engineering, LLC
30 Park Road, Suite 4, Tinton Falls, NJ 07724 732-886-5432

BRIAN D. TANNENHAUS

NJ PROFESSIONAL ENGINEER
NO. GE 45801

ISSUED FOR BIDDING
NOT FOR CONSTRUCTION
01/23/2024

DATE:_____

no.	by	description	date
		ISSUED FOR BIDDING	01/23/2024

revisions

CAPE MAY BOARDWALK BATHROOMS

702 BEACH AVENUE

CAPE MAY, NJ

project title

HVAC SCHEDULES AND DETAILS

drawing name

scale AS NOTED

date 01/23/24

drawn by EH

project no. 220121

drawing no. M3.1

1/23/2024 4:31 PM

1. GENERAL NOTES, SYMBOLS LIST AND DETAILS ARE APPLICABLE TO ALL DRAWINGS MARKED P.

2. DRAWINGS ARE DIAGRAMMATIC: DETERMINE LOCATIONS OF SYSTEMS AND COMPONENTS IN FIELD.

3. NEITHER ACCURACY NOR COMPLETION OF UTILITY LOCATIONS SHOWN ON DRAWINGS IS GUARANTEED. DETERMINE EXACT LOCATIONS OF EXISTING UTILITY IN FIELD, WHETHER OR NOT SHOWN ON DRAWINGS. EXERCISE CAUTION AND IDENTIFY LOCATIONS OF UNMARKED UTILITY LINES AS NECESSARY TO PERFORM WORK OF THIS SECTION.

4. ALL PLUMBING WORK SHALL BE IN ACCORDANCE WITH THE CURRENT PLUMBING CODE AND ALL APPLICABLE LOCAL CODES AND DRAWINGS.

5. IT SHALL BE THE RESPONSIBILITY OF THIS CONTRACTOR TO COORDINATE HIS WORK WITH THAT OF ALL OTHER TRADES, INCLUDING (BUT NOT LIMITED TO), ELECTRICAL, HVAC PROCESS PIPING, KITCHEN EQUIPMENT VENDOR, STRUCTURAL AND GENERAL ARCHITECTURE.

6. ANY INTERFERENCE SHALL BE BROUGHT TO THE ATTENTION OF THE ENGINEER, AND SHALL BE RESOLVED PRIOR TO THE INSTALLATION OF THE WORK INVOLVED.

7. NO WORK SHALL BE INSTALLED IN VIOLATION OF ANY GOVERNING CODES. ANY WORK SHOWN ON THE DRAWINGS WHICH IS IN VIOLATION OF SUCH CODES SHALL BE BROUGHT TO THE ATTENTION OF THE ARCHITECT AND SHALL BE RESOLVED PRIOR TO THE INSTALLATION OF THE WORK INVOLVED.

8. ALL PIPING PENETRATING CEILING AND WALLS SHALL BE INSTALLED WITH CHROME (STAINLESS WHERE NOTED) PLATED ESCUTCHEONS AT THE PENETRATION. ALL PIPING PENETRATING EXTERIOR WALLS AND ROOFS SHALL BE FLASHED IN AN APPROVED MANNER AND SHALL BE SEALED WEATHER TIGHT. PIPING PENETRATING RATED PARTITIONS SHALL BE PROTECTED AS REQUIRD BY LOCAL CODE AUTHORITY.

9. MANUFACTURER'S MODEL NUMBERS ARE SPECIFIED SOLELY TO ESTABLISH STANDARDS OF QUALITY FOR PERFORMANCE AND MATERIALS.

10. PRODUCTION INSTALLATION SHALL ADHERE TO MANUFACTURERS' RECOMMENDATIONS.

11. PROVIDE ACCESS PANELS FOR EQUIPMENT THAT REQUIRES PERIODIC SERVICE.

12. TOPS OF ALL FLOOR DRAINS SHALL BE SET FLUSH WITH FINISHED FLOOR. ALL PIPING ABOVE GRADE SHALL BE PROPERLY SUPPORTED BY THE BUILDING STRUCTURE AND SHALL NOT REST ON CEILING TILES OR CEILING STRUCTURE.

13. CONTRACTOR SHALL COORDINATE ELECTRICAL CHARACTERISTICS AND REQUIREMENTS OF ALL PLUMBING EQUIPMENT WITH THE ELECTRICAL DRAWINGS AND SHALL FURNISH EQUIPMENT WIRED FOR THE VOLTAGES SHOWN HEREIN.

14. CONNECT NEW WORK TO EXISTING WORK IN A NEAT AND ACCEPTABLE MANNER. RESTORE EXISTING DISTURBED WORK TO ITS ORIGINAL CONDITION, INCLUDING MAINTENANCE OF WIRING CONTINUITY AS REQUIRED.

15. CONNECT NEW WORK TO EXISTING WORK WITH MINIMUM INTERFERENCE TO EXISTING FACILITIES. TEMPORARY SHUTDOWNS ARE PERMISSIBLE ONLY WITH WRITTEN CONSENT OF THE OWNER. ALARM AND EMERGENCY SYSTEMS ARE NOT TO BE INTERRUPTED.

16. FIRESTOPPING SHALL BE INSTALLED WHENEVER PIPING CROSSES FIRE RATED PARTITIONS. REFER TO THE ARCHITECTURAL PLANS FOR FIRE RATED PARTITION LOCATIONS. THE FIRESTOPPING SHALL MATCH OR EXCEED THE FIRE RATING OF THE PARTITION PENETRATED. ALL FIRESTOPPING SHALL BE A UL LISTED ASSEMBLY.

17. PROVIDE SHUTOFF VALVES ON ALL BRANCH PIPING AND ON ALL SUPPLIES TO INDIVIDUAL FIXTURES AND EQUIPMENT. PROVIDE BALL VALVES ON ALL WATER MAIN BRANCHES WHERE INDICATED ON DRAWINGS. ALL VALVES SHALL BE ACCESSIBLE.

18. ALL SLEEVES THROUGH CONCRETE FLOORS AND ALL CORE DRILLING OF CONCRETE FLOORS AND WALLS SHALL BE BY THIS CONTRACTOR.

19. COORDINATE ROOF PENETRATIONS WITH WORK OF OTHER SECTIONS AND WITH FLASHING REQUIREMENTS.

20. RUN PIPING CONCEALED IN WALLS AND CEILING CAVITIES, UNLESS SPECIFIED OTHERWISE, AND CLEAR OF CEILING INSERTS.

21. PROVIDE CLAMPS, OFFSETS, EXPANSION JOINTS, ANCHORS AND GUIDES AS NECESSARY TO PREVENT STRESS ON PIPING.

22. PROVIDE BALANCING VALVES AT SYSTEM LOOP RETURNS AND AT RETURN RISERS. PROVIDE SHUT-OFF VALVES AT SYSTEM LOOP SUPPLIES AND SUPPLY RISERS.

23. PROVIDE VENTS AT HIGH POINTS IN PIPING SYSTEMS AND DRAIN VALVES AT LOW POINTS.

24. PROVIDE GAUGE FITTINGS AND THERMOMETER WELLS AT HOT WATER SUPPLY AND RETURN BRANCHES AND AT PUMP INLETS AND OUTLETS.

25. VERIFY EXACT SIZES, LOCATIONS, INVERTS AND ELEVATIONS PRIOR TO RUNNING ANY PIPING. REFER TO ARCHITECTURAL DRAWINGS FOR EXACT LOCATIONS OF ALL FIXTURES AND EQUIPMENT.

26. PLUMBING SUBCONTRACTOR IS RESPONSIBLE FOR EXTENDING ALL REGULATOR VENTS TO ATMOSPHERE. REGULATORS ARE PART OF THIS CONTRACTORS SCOPE OF WORK.

27 WATER HEATERS SHALL BE INSTALLED WITH DRAIN PANS UNDER HEATERS. ROUTE PAN DRAINS TO NEAREST FLOOR DRAIN OR SAFE WASTE PIPE LOCATION.

28. PIPING SHALL NOT RUN OVER ELECTRICAL PANELS AND SHALL BE COORDINATED WITH WORK OF OTHER TRADES.

29. ALL NEW PIPING SHALL BE CONCEALED IN CEILING, WALL CAVITIES AND/OR UNDER SLAB, UNLESS OTHERWISE NOTED. EXISTING PIPING TO REMAIN BUT EXPOSED AS A RESULT OF DEMOLITION OPERATIONS SHALL BE RE-ROUTED/MODIFIED FOR CONCEALMENT IN CEILING OR WALL CAVITIES, OR UNDER SLAB, AT NO ADDITIONAL COST TO THE OWNER.

30. CONTRACTOR SHALL INCLUDE PATCHING OF CONCRETE FLOOR DUE TO SAWCUTTING REQUIREMENTS FOR NEW UNDERGROUND PIPING.

31. CONTRACTOR SHALL PROVIDE BACKFLOW PREVENTION DEVICES ON ALL WATER CONNECTED EQUIPMENT AS REQUIRED BY APPLICABLE CODE.

32. PC IS RESPONSIBLE TO PROVIDE ACCESS PANELS FOR ANY CONCEALED PLUMBING WORK THAT MUST BE ACCESSIBLE EITHER BY CODE OR AS INDICATED IN THE DOCUMENTS. ALL ACCESS DOOR LOCATIONS SHALL BE REVIEWED AND APPROVED BY ARCHITECT PRIOR TO INSTALLATION OF DEVICE REQUIRING THE ACCESS PANEL. ALL ACCESS DOORS MUST MATCH THE FIRE RATING AND CONSTRUCTION TYPE OF THE CEILING OR WALL PENETRATION AS DESIGNATED ON THE ARCHITECTURAL DRAWINGS.

33. THE CONTRACTOR SHALL BRING ANY CONFLICTS IN THE DRAWINGS TO THE ATTENTION OF THE ENGINEER DURING THE BIDDING PROCESS. IF NOT BROUGHT UP TO THE ENGINEER DURING THE BIDDING PROCESS THE MORE EXPENSIVE OPTION SHALL BE CHOSEN FOR BIDDING PURPOSES.

34. THE CONTRACTOR SHALL PROVIDE ADJUSTABLE THERMOSTATIC MIXING VALVES FOR ALL HAND SINKS TO LIMIT THE HOT WATER TEMPERATURE COMING OUT OF THE FAUCET TO 105 DEGREES FAHRENHEIT BUT BE ADJUSTABLE UP TO 110 DEGREES FAHRENHEIT AS DIRECTED BY THE CLIENT.

35. THE CONTRACTOR SHALL USE THERMOSTATIC MIXING VALVES THAT COMPLY WITH ASSE STANDARDS. POINT OF USE MIXING VALVES SHALL COMPLY WITH ASSE 1070-2020 OR 1069-2020. MANIFOLD MIXING VALVES SHALL COMPLY WITH ASSE 1069-2020. FACILITY WATER DISTRIBUTION MIXING VALVES SHALL COMPLY WITH ASSE 1017-2009. EMERGENCY EYEWASH / SHOWER MIXING VALVES SHALL COMPLY WITH ASSE 1071-2012.

36. THE CONTRACTOR SHALL PROVIDE COVERS FOR ALL PIPING ABOVE AND BELOW GROUND AT THE END OF THE DAY AND DURING THE DAY TO ENSURE DEBRIS DOES NOT ENTER THE PIPE. FAILURE TO DO THIS WILL REQUIRE THE CONTRACTOR TO SCOPE THE PIPING AFTER FINAL INSTALLATION AND VIDEO TAPE THE SCOPING FOR RECORD TO ENSURE NO DEBRIS IS PRESENT IN THE PIPE. ANY DEBRIS WILL BE REMOVED OR THE PIPE WILL BE REPLACED AT THE CONTRACTORS EXPENSE INCLUDING THE TRENCHING AND REPAIR OF ANY FLOOR OR GRADE FINISHES. A COPY OF THE VIDEO SHALL BE GIVEN TO THE OWNER FOR THEIR RECORD.

37. FOR ALL FAST ACTING VALVES SUCH AS BUT NOT LIMITED TO ELECTRICALLY OPERATED VALVES, HOSE STATIONS, HOSE SPRAYERS, FLUSHOMETERS, ETC., WATER HAMMER ARRESTERS ARE TO BE PROVIDED. ARRESTER SHALL BE SIZED AS PER THE ARRESTER MANUFACTURER REQUIREMENTS AND COORDINATED WITH THE SIZE OF THE FAST ACTING VALVE.

38. PLUMBING CONNECTIONS ARE SHOWN FOR DIAGRAMMATIC PURPOSES AND THE CONTRACTOR SHALL NOT BASE THEIR BID ON THE LOCATION OF THOSE CONNECTIONS. SUBMISSION OF A BID INDICATES AN UNDERSTANDING THE CONTRACTOR WILL CONNECT THE PLUMBING CONNECTIONS TO THE EQUIPMENT IN THE LOCATION SPECIFIED BY THE MANUFACTURE OR PER CONSTRUCTION RESTRICTIONS AT NO ADDITIONAL COST TO THE CLIENT.

39. PLUMBING CONTRACTOR IS RESPONSIBLE FOR COORDINATING ALL FINAL UTILITY CONNECTIONS WITH THE UTILITY COMPANIES. FOR EXAMPLE: IF THE PROJECT HAS NATURAL GAS SERVICE AND THE SYSTEM IS EXISTING THE CONTRACTOR SHALL CALL THE UTILITY COMPANY AND TAKE OVER AS THE LEAD CONTACT PERSON FOR THE ADDITIONAL LOAD APPLICATION AND BE THE NEW POINT OF CONTACT FOR ANY CHANGES REQUIRED FOR THE EXISTING GAS SERVICE. THIS INTRODUCTION AND CHANGE OF POINT CONTACT SHALL HAPPEN WITHIN THE FIRST TWO WEEKS OF STARTING THE PROJECT. IT IS THE PC'S RESPONSIBILITY TO COMMUNICATE WITH THE UTILITY COMPANY SERVICE START DATES AS TO NOT DELAY THE PROJECT WITH INADEQUATE UTILITY SERVICES.

40. CONTRACTOR SHALL PROVIDE MANUFACTURED PROTECTIVE SHIELDING PIPE COVERS FOR HOT AND COLD WATER SUPPLY, TRAP, AND DRAIN PIPING IN COMPLIANCE WITH THE AMERICANS WITH DISABILITIES ACT (ADA) REQUIREMENTS.

GENERAL NOTES

SYMBOL	DESCRIPTION
	NEW - UNLESS OTHERWISE NOTED, DARK LINE WEIGHT.
	EXISTING - UNLESS OTHERWISE NOTED, LIGHT LINE WEIGHT
—— —— S —— ——	SANITARY PIPING
—— —— W —— ——	WASTE PIPING
—— —— CWV —— ——	COMINATION WASTE VENT PIPING
— — — — — — —	VENT PIPING (ABOVE)
- - - - - - - - - -	VENT PIPING (BELOW)
—— ST ——	STORM PIPING
—— G ——	NATURAL GAS
—— – ——	COLD WATER
—— – – ——	HOT WATER
—— – – – ——	HOT WATER RECIRC.
—— —— GW —— ——	GREASE WASTE
—— —— IW —— ——	INDIRECT WASTE
—— o – – o – – o ——	CONDENSATE
—— FW ——	FILTER WATER
—— TW ——	TEMPERED WATER
—— CA ——	COMPRESSED AIR
—— STM ——	STEAM

NOT ALL SYMBOLS AND ABBREVIATIONS SHOWN ON THIS PLAN ARE USED IN THE FOLLOWING DRAWINGS.

SYMBOL	DESCRIPTION
	SHUT OFF VALVE
	CHECK VALVE
	BACKFLOW PREVENTION
	TEMPERING VALVE
	BALANCING VALVE
	PRESS. RED. VALVE
	SOLENOID VALVE
	GAS COCK
	GREASE INTERCEPTOR
	HUB DRAIN
	EXISTING HUB DRAIN
	FLOOR SINK
	EXISTING FLOOR SINK
	FLOOR DRAIN
	EXISTING FLOOR DRAIN
	FLOOR CLEAN OUT
	EXISTING FLOOR CLEAN OUT
	WALL CLEAN OUT
	HORIZONTAL CLEAN OUT
	CASE DRAIN
	STAND PIPE
	TRENCH DRAIN
	P TRAP
	PIPE DOWN & DROP
	PIPE UP & RISE
	BACKWATER VALVE
	HOSE BIBB
	WASH DOWN FAUCET / HOSE BIBB
	WATER FILTER
	FLOW ARROW
	TRAP PRIMER
	CONNECT TO EXISTING
X	DRAWING NOTE - 'X' DENOTES NOTE NUMBER SHOWN ON PLAN.
X	KEY NOTE - 'X' DENOTES NOTE NUMBER SHOWN FOR ALL PLUMBING PLANS.
X	DEMOLITION NOTE - 'X' DENOTES NOTE NUMBER SHOWN ON PLAN

ABBREVIATIONS

AFF	ABOVE FINISHED FLOOR	HS	HAND SINK
AFG	ABOVE FINISHED GRADE	HW	HOT WATER
ASSY	ASSEMBLY	HCO	HORIZONTAL CLEANOUT
BFC	BELOW FINISHED CEILING	HWR	HOT WATER RECIRCULATION
BFF	BELOW FINISHED FLOOR	IW	INDIRECT WASTE
BFG	BELOW FINISHED GRADE	MS	MOP SINK
BW	BOOT WASH	NTS, N.T.S.	NOT TO SCALE
CL	CENTER LINE	OC	ON CENTER
CLG	CEILING	PC	PLUMBING CONTRACTOR
CO	CLEAN OUT	RD	ROOF DRAIN
COMP	COMPARTMENT	RE	EXISTING TO BE REMOVED
CW	COLD WATER	REX	EXISTING TO BE RELOCATED
DN	DOWN	SAN	SANITARY
DOM	DOMESTIC WATER	SPR	SPRINKLER
DW	DISH WASHER	SC	SCUPPER
DWH	DOMESTIC WATER HEATER	SD	STORM DRAIN
EWH	ELECTRIC WATER HEATER	SF	SQUARE FEET
EWC	ELECTRIC WATER COOLER	SP	STAND PIPE
EX	EXISTING TO REMAIN	SS	STAINLESS STEEL
FAI	FRESH AIR INTAKE	ST	STORM
FCO	FLOOR CLEAN OUT	TD	TRENCH DRAIN
FD	FLOOR DRAIN	TP	TRAP PRIMER
FFD	FUNNEL FLOOR DRAIN	TW	TEPID WATER
FP	FROST PROOF	TYP	TYPICAL
NFWH	NON FREEZE WALL HYDRANT	U/C	UNDER COUNTER
FS	FLOOR SINK	V	VENT
G	GAS	VIF	VERIFY IN FIELD
GI	GREASE INTERCEPTOR	VTR	VENT THRU ROOF
HB	HOSE BIBB	W	WASTE
HR	HOSE REEL	WF	WATER FILTER
		WP	WEATHERPROOF
		WCO	WALL CLEAN OUT

SYMBOL LEGENDS AND ABBREVIATIONS

PROJECT NOTES:

THE CONTRACTOR SHALL RECEIVE AND REVIEW ALL OF THE PROJECTS DRAWINGS AND SPECIFICATIONS SUCH AS ARCHITECTURAL, STRUCTURAL, HVAC, ELECTRICAL, PLUMBING, FIRE ALARM, SPRINKLER, SITE, ETC. TO UNDERSTAND THE FULL SCOPE OF WORK. FAILURE TO RECEIVE AND REVIEW THOSE PLANS DURING BIDDING WILL RESULT IN THE DENIAL OF EXTRA'S.

PLUMBING EQUIPMENT SCHEDULE

				ELECTRICAL SECTION			
TAG	EQUIPMENT	MANUFACTURER	MODEL	VOLTAGE	PHASE	AMPS	NOTES
EXP	EXPANSION TANK	TACO	PAX-10				
EWH	ELECTRIC WATER HEATER	AO SMITH	DEL-20	240	1		4kW. DIM: 21.75" DIA 22.25" TALL. 16 GPH RECOVERY AT 100 DEG RISE
RCP	RECIRCULATION PUMP	TACO	006e3	115	1	0.54	44 WATTS

PLUMBING FIXTURE SCHEDULE

				MISC. SECTION			PLUMBING CONNECTION SIZES				
TAG	FIXTURE	MANUFACTURER	MODEL	MOUNT TYPE	MATERIAL/COLOR	FIXTURE ACCESSORIES	CW	HW	SAN	VENT	NOTES
FD	FLOOR DRAIN	WATTS	FD-100A	FLOOR	CAST IRON	NICKEL BRINZE STRAINER	-	-	2"	1-1/2"	PROVIDE A TRAP SEAL
LAV	LAVATORY SINK	SLOAN	AD-82000	WALL	CORIAN	BASYS MID FAUCET, HAND DRYER, SOAP DISPENSER, MIX-135-A THERMOSTATIC MIXING VALVE, GRID STRAINER AND CHROME TRAP	1/2"	1/2"	1-1/2"	1-1/2"	HARDWIRED 120V. REFER TO MANUFACTURER FOR ELECTRICAL OUTLET REQUIREMENTS
MS	MOP SINK	FIAT	TSB200	FLOOR	TERRAZZO	FAUCET FIAT 830AA	1/2"	1/2"	3"	1-1/2"	24" x 24" x 12"
UR	URINAL	AMERICAN STANDARD	WASHBROOK FLOWISE	WALL	WHITE VITREOUS CHINA	FLUSHOMETER SLOAN 186 ESS	3/4"	-	2"	1-1/2"	HARDWIRED 24 VAC CONTROL CIRCUIT. URINAL & FLUSHOMETER COMBO
WC	WATER CLOSET	AMERICAN STANDARD	2856016.02	WALL	WHITE VITREOUS CHINA	FLUSHOMETER SLOAN 111 ESS	1"	-	4"	2"	HARDWIRED 24 VAC CONTROL CIRCUIT. WATER CLOSET & FLUSHOMETER COMBO

THE CONTRACTOR SHALL CONFORM TO THE LATEST BUILDING CODES:

IBC 2021 WITH NEW JERSEY AMENDMENTS

NSPC 2021 WITH NEW JERSEY AMENDMENTS

APPLICABLE CODES

DRAWING LIST

BD engineering
NJ CERTIFICATE OF AUTHORIZATION - 24GA28116100
BD Engineering, LLC
30 Park Road, Suite 4, Tinton Falls, NJ 07724 732-886-5432

BRIAN D. TANNENHAUS

ISSUED FOR BIDDING
NOT FOR CONSTRUCTION
01/23/2024

NJ PROFESSIONAL ENGINEER
NO. GE 45801

DATE:_____

no.	by	description	date
		ISSUED FOR BIDDING	01/23/2024

revisions

CAPE MAY BOARDWALK BATHROOMS

702 BEACH AVENUE

CAPE MAY, NJ

project title

PLUMBING COVER SHEET

drawing name

scale AS NOTED

date 01/23/24

drawn by RL

project no. 220121

P1.1

drawing no.

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PLUMBING WORK SPECIFICATIONS

1. GENERAL:

A. THE "GENERAL CONDITIONS OF THE CONTRACT FOR CONSTRUCTION," AIA DOCUMENT A201, LATEST EDITION, AND THESE SPECIFICATIONS AS APPLICABLE ARE PART OF THIS CONTRACT.

B. ALL APPLICABLE CODES, LAWS AND REGULATIONS GOVERNING OR RELATING TO ANY PORTION OF THIS WORK ARE HEREBY INCORPORATED INTO AND MADE PART OF THESE SPECIFICATIONS, AND THERE PROVISIONS SHALL BE CARRIED OUT BY THE CONTRACTOR WHO SHALL INFORM THE OWNER, PRIOR TO SUBMITTING A PROPOSAL, OF ANY WORK OR MATERIAL WHICH VIOLATES ANY OF THE ABOVE LAWS AND REGULATIONS. ANY WORK DONE BY THE CONTRACTOR CAUSING SUCH VIOLATION SHALL BE CORRECTED BY THE CONTRACTOR AT THEIR OWN COST.

C. INVESTIGATE EACH SPACE THROUGH WHICH EQUIPMENT MUST BE MOVED. WHERE NECESSARY, EQUIPMENT SHALL BE SHIPPED FROM THE MANUFACTURE IN SECTIONS OF A SIZE SUITABLE FOR MOVING THROUGH AVAILABLE RESTRICTIVE SPACES. ASCERTAIN FROM THE BUILDING OWNER AND TENANT AT WHAT TIMES OF THE DAY EQUIPMENT MAY BE MOVED THROUGH ALL AREAS.

D. DRAWINGS ARE DIAGRAMMATIC AND INDICATE GENERAL ARRANGEMENT OF SYSTEMS AND WORK. PIPE ROUTING IS SHOWN DIAGRAMMATICALLY AND DOES NOT SHOW ALL OFFSETS, DROPS AND RISES OF RUNS. THE CONTRACTOR SHALL ALLOW IN HIS/HER PRICE FOR ROUTING OF PIPING TO AVOID OBSTRUCTIONS, COORDINATION WITH EXISTING SERVICES, INCLUDING THOSE OF OTHER TRADES, IS REQUIRED. MAINTAIN HEADROOM AND SPACE CONDITIONS.

E. SUPPORT ALL PIPING FROM BUILDING STRUCTURE AND/OR FRAMING IN AN APPROVED MANNER. WHERE OVERHEAD CONSTRUCTION DOES NOT PERMIT FASTENING OR SUPPORTS FOR EQUIPMENT, FURNISH ADDITIONAL FRAMING. INSERTS SHALL BE STEEL, SLOTTED TYPE AND FACTORY PAINTED. SINGLE ROD SHALL BE SIMILAR TO GRINNELL FIG. 281. MULTI-ROD SHALL BE SIMILAR TO FEE & MASON SERIES 9000 WITH END CAPS AND CLOSURE STRIPS. MAXIMUM LOADING INCLUDING PIPES CONTENT AND COVERING SHALL NOT EXCEED 75% OF RATED INSERT CAPABILITY. WHEN SUPPORTING FROM BUILDING USE BEAM CLAMPS IN APPROVED MANNER. PROVIDE SEISMIC RESTRAINTS AS REQUIRED BY CODE.

F. INSTALL WORK AS TO BE READILY ACCESSIBLE FOR OPERATION, MAINTENANCE AND REPAIR. MINOR DEVIATIONS FROM THE DRAWINGS MAY BE MADE TO ACCOMPLISH THIS, BUT CHANGES, WHICH INVOLVE EXTRA COST, SHALL NOT BE MADE WITHOUT OUR OR OWNER APPROVAL.

G. REMOVAL AND RELOCATION OF CERTAIN EXISTING WORK MAY BE NECESSARY FOR THE PERFORMANCE OF THE GENERAL WORK. ALL EXISTING CONDITIONS CANNOT BE COMPLETELY DETAILED ON THE DRAWINGS. THE CONTRACTOR SHALL SURVEY THE SITE AND INCLUDE ALL CHANGES AND CHARGES IN MAKING UP THE WORK PROPOSED.

H. CONNECTIONS TO EXISTING WORK: INSTALL NEW WORK AND CONNECT TO EXISTING WORK WITH A MINIMUM INTERFERENCE TO EXISTING FACILITIES. TEMPORARY SHUTDOWNS OF EXISTING SERVICES SHALL BE PERFORMED AT NO ADDITIONAL CHARGES, AT TIMES NOT TO INTERFERE WITH NORMAL OPERATION OF EXISTING FACILITIES AND ONLY WITH WRITTEN CONSENT OF THE OWNER. ALARM AND EMERGENCY SYSTEMS SHALL NOT BE INTERRUPTED. MAINTAIN CONTINUOUS OPERATION OF THE EXISTING FACILITIES AS REQUIRED WITH NECESSARY TEMPORARY CONNECTIONS BETWEEN NEW AND EXISTING WORK. CONNECT NEW WORK TO EXISTING WORK IN NEAT AND ACCEPTABLE MANNER. RESTORE EXISTING DISTURBED WORK TO ORIGINAL CONDITION, INCLUDING MAINTENANCE OF WIRING CONTINUITY AS REQUIRED.

I. DISCONNECT, REMOVE AND/OR RELOCATE EXISTING MATERIAL, EQUIPMENT AND OTHER WORK AS NOTED OR REQUIRED FOR PROPER INSTALLATION OF NEW WORK.

J. ALL EXISTING MATERIAL, EQUIPMENT AND CONSTRUCTION DEBRIS TO BE REMOVED UNDER THIS CONTRACT SHALL BECOME THE PROPERTY OF THE CONTRACTOR WITH THE EXCEPTION OF SPECIFIC EQUIPMENT AND APPARATUS REQUESTED BY THE BUILDING REPRESENTATIVE, ARCHITECT OR AS NOTED TO BE RELOCATED ON THE DRAWINGS. REMOVED EQUIPMENT SHALL BE PROPERLY DISPOSED OF BY THIS CONTRACTOR.

K. THE CONTRACTOR SHALL KEEP ALL EQUIPMENT AND MATERIALS AND ALL PARTS OF THE BUILDING, EXTERIOR SPACES AND ADJACENT STREETS, SIDEWALKS AND PAVEMENTS, FREE FROM MATERIAL AND DEBRIS RESULTING FROM THE EXECUTION OF THIS WORK. EXCESS MATERIALS WILL NOT BE PERMITTED TO ACCUMULATE EITHER ON THE INTERIOR OR THE EXTERIOR.

L. SEAL OPENING THROUGH PARTITIONS, WALLS AND FLOORS WITH MINERAL WOOL OR OTHER NONCOMBUSTIBLE MATERIAL. ALL PENETRATIONS THROUGH NEW AND EXISTING RATED FIRE AND SMOKE PARTITIONS AND/OR FLOORS SHALL BE COMPLETELY SEALED USING MATERIALS AND METHODS DESCRIBED IN SUBSEQUENT "FIRE STOPPING" SPECIFICATIONS SECTIONS.

M. PROVIDE ALL NECESSARY FLASHING AND COUNTERFLASHING TO MAINTAIN THE WATERPROOFING INTEGRITY OF THE BUILDING AS REQUIRED BY THE INSTALLATION OR REMOVAL OF PIPING AND EQUIPMENT. PROVIDE EQUIPMENT CURBS AS REQUIRED AND POSITIVELY ATTACH THE EQUIPMENT TO THE STRUCTURE BELOW.

N. THE WORK IN THE BUILDING SHALL BE DONE WHEN AND AS DIRECTED, IN A MANNER SATISFACTORY TO THE OWNER. THE WORK SHALL BE PERFORMED AS TO CAUSE THE LEAST POSSIBLE INCONVENIENCE AND DISTURBANCE TO THE PRESENT OCCUPANTS.

O. THE CONTRACTOR'S PROPOSAL FOR ALL WORK SHALL BE PREDICATED ON THE PERFORMANCE OF THE WORK DURING REGULAR WORKING HOURS. WHEN SO DIRECTED, HOWEVER, THE CONTRACTOR SHALL INSTALL WORK DURING OVERTIME HOURS AND THE ADDITIONAL COST TO BE CHARGED THEREFORE SHALL BE ONLY THE "PREMIUM" PORTION OF THE WAGES PAID.

P. UNLESS OTHERWISE SPECIFICALLY NOTED OF SPECIFIED, INCLUDE ALL CUTTING AND PATCHING OF EXISTING FLOORS, WALLS, PARTITIONS AND OTHER MATERIALS IN THE EXISTING BUILDING. THE CONTRACTOR SHALL RESTORE THESE AREAS TO ORIGINAL CONDITION.

Q. PC IS RESPONSIBLE TO PROVIDE ACCESS PANELS FOR ANY CONCEALED PLUMBING WORK THAT MUST BE ACCESSIBLE EITHER BY CODE OR AS INDICATED IN THE DOCUMENTS. ALL ACCESS DOOR LOCATIONS SHALL BE REVIEWED AND APPROVED BY ARCHITECT PRIOR TO INSTALLATION OF DEVICE REQUIRING THE ACCESS PANEL. ALL ACCESS DOORS MUST MATCH THE FIRE RATING AND CONSTRUCTION TYPE OF THE CEILING OR WALL PENETRATION AS DESIGNATED ON THE ARCHITECTURAL DRAWINGS.

R. ALL MATERIAL AND EQUIPMENT SHALL BE NEW UNLESS OTHERWISE NOTED AND SHALL BE IN ACCORDANCE WITH BUILDING STANDARDS.

S. SUBMISSION OF A PROPOSAL SHALL BE CONSTRUED AS EVIDENCE THAT A CAREFUL EXAMINATION OF ALL OF THE PLANS APPLICABLE FOR THE PROJECT AND NOT JUST THE PLUMBING PLANS AND IS FAMILIAR WITH ANY PROPOSED CONDITIONS THAT WILL NEED TO BE COORDINATED IN THE FIELD. FOR EXISTING BUILDINGS: THE PORTIONS OF THE EXISTING BUILDING, EQUIPMENT, ETC., WHICH AFFECT THIS WORK, AND THE ACCESS TO SUCH SPACES, HAS BEEN MADE AND THAT THE CONTRACTOR IS FAMILIAR WITH EXISTING CONDITIONS AND DIFFICULTIES THAT WILL AFFECT THE EXECUTION OF THE WORK. THE CONTRACTOR IS RESPONSIBLE TO INDICATE ANY DISCREPANCIES BETWEEN THE CONTRACT DRAWINGS AND ACTUAL FIELD CONDITIONS PRIOR TO SUBMITTAL OF BID. SUBMISSION OF A PROPOSAL WILL BE CONSTRUED AS EVIDENCE THAT THE CONTRACTOR HAS TOROUGHLY REVIEWED ALL OF THE DOCUMENTATION ASSOCIATED WITH THE PROJECT AND IF AN EXISTING BUILDING REVIEWED ALL OF THE EXISTING CONDITIONS. LATER CLAIMS SHALL NOT BE MADE FOR LABOR, EQUIPMENT OR MATERIALS REQUIRED BECAUSE OF DIFFICULTIES ENCOUNTERED WHICH COULD HAVE BEEN FORESEEN DURING SUCH AN EXAMINATION AND REVIEW. THE ON-SITE INSPECTION SHALL VERIFY EXISTING EQUIPMENT AND PIPING (SIZES, CLEARANCES, ETC.) AND CONDITIONS.

T. INSURANCE: IN ACCORDANCE WITH BUILDING REQUIREMENTS AND SHALL INCLUDE A HOLD HARMLESS CLAUSE FOR OWNER AND ENGINEER.

U. THE FINAL ACCEPTANCE SHALL BE MADE AFTER THE CONTRACTOR HAS ADJUSTED HIS EQUIPMENT, TESTED AND BALANCED THE VARIOUS SYSTEMS, DEMONSTRATED THAT IT FULFILLS THE REQUIREMENTS OF THE DRAWINGS AND SPECIFICATIONS AND HAS FURNISHED ALL THE REQUIRED CERTIFICATES OF INSPECTION AND APPROVAL.

V. SPECIFICATIONS ARE OF SIMPLIFIED FORM AND INCLUDE INCOMPLETE SENTENCES. WORDS OR PHRASES SUCH AS "THE CONTRACTOR SHALL," "SHALL BE," "FURNISH," "PROVIDE," "A," "THE," AND "ALL" HAVE BEEN OMITTED FOR BREVITY.

W. DEFINITIONS:

1. "PROVIDE": TO SUPPLY, INSTALL AND CONNECT UP COMPLETE AND READY FOR SAFE AND REGULAR OPERATION THE PARTICULAR WORK REFERRED TO UNLESS SPECIFICALLY OTHERWISE NOTED.

2. INSTALL": TO ERECT, MOUNT AND CONNECT COMPLETE WITH RELATED ACCESSORIES.

3. "FURNISH" OR "SUPPLY": TO PURCHASE, PROCURE, ACQUIRE AND DELIVER COMPLETE WITH RELATED ACCESSORIES.

4. "WORK": LABOR, MATERIALS, EQUIPMENT, APPARATUS, CONTROLS, ACCESSORIES AND OTHER ITEMS REQUIRED FOR PROPER AND COMPLETE INSTALLATION.

5. "CONCEALED": EMBEDDED IN MASONRY OR OTHER CONSTRUCTION, INSTALLED IN FURRED SPACES, WITHIN DOUBLE PARTITIONS OR HUNG CEILINGS, IN TRENCHES, IN CRAWL SPACES, OR IN ENCLOSURES.

6. "EXPOSED": NOT INSTALLED UNDERGROUND OR "CONCEALED" AS DEFINED ABOVE.

7. "SIMILAR" OR "EQUAL": EQUAL IN MATERIALS, WEIGHT, SIZE, DESIGN AND EFFICIENCY OF SPECIFIED PRODUCT.

2. SCOPE OF WORK:

A. THE SCOPE OF WORK SHALL CONSIST OF PROVIDING LABOR, MATERIALS, EQUIPMENT, SERVICES AND FEES NECESSARY FOR COMPLETE AND SAFE INSTALLATION IN CONFORMITY WITH THE NATIONAL STANDARD PLUMBING CODE AND ALL OTHER APPLICABLE INDUSTRY, STATE, NATIONAL AND LOCAL CODES AND AUTHORITIES HAVING JURISDICTION, AS INDICATED ON THE DRAWINGS AND HEREIN SPECIFIED.

B. ALL DRAWINGS, PLANS, DETAILS, SPECIFICATIONS AND SPECIFICATION ADDENDA ARE MADE PART OF THIS CONTRACT AND SHALL APPLY TO ALL WORK UNDER THE CONTRACT UNLESS OTHERWISE AMENDED, MODIFIED, SUPPLEMENTED OR SPECIFIED HEREIN.

C. THE CONTRACTOR SHALL FURNISH A WRITTEN GUARANTEE TO REPLACE OF REPAIR PROMPTLY AND ASSUME RESPONSIBILITY FOR ALL EXPENSES INCURRED FOR ANY WORKMANSHIP AND EQUIPMENT IN WHICH DEFECTS DEVELOP WITHIN ONE YEAR FROM THE DATED OF FINAL CERTIFICATE FOR PAYMENT AND/OR FROM DATE OR ACTUAL USE OF EQUIPMENT OR OCCUPANCY OF SPACES BY THE OWNER INCLUDED UNDER THE VARIOUS PARTS OF THE WORK, WHICHEVER DATE IS EARLIER. THIS WORK SHALL BE DONE AS DIRECTED BY THE OWNER. THIS GUARANTEE SHALL ALSO PROVIDE THAT WHERE DEFECTS OCCUR, THE CONTRACTOR SHALL ASSUME RESPONSIBILITY FOR ALL EXPENSES INCURRED IN REPAIRING AND REPLACING WORK OF OTHER TRADES AFFECTED BE DEFECTS, REPAIRS OR REPLACEMENTS IN EQUIPMENT SUPPLIED BY THE CONTRACTOR.

D. THE CONTRACTOR SHALL GIVE NECESSARY NOTICE, FILE DRAWINGS AND SPECIFICATIONS WITH ALL DEPARTMENTS HAVING JURISDICTION, OBTAIN PERMITS OR LICENSES NECESSARY TO CARRY OUT THIS WORK AND PAY ALL FEES THEREFORE. THE CONTRACTOR SHALL ARRANGE FOR INSPECTION AND TESTS OF ANY OR ALL PARTS OF THE WORK IF SO REQUIRED BY AUTHORITIES FOR, AND FURNISH TO THE OWNER BEFORE BILLING, ALL CERTIFICATES NECESSARY AS EVIDENCE THE WORK INSTALLED CONFORMS WITH ALL REGULATIONS WHERE THEY APPLY TO THIS WORK.

3. SHOP DRAWINGS:

A. PRIOR TO THE INSTALLATION OF ANY WORK AND PROCUREMENT OF EQUIPMENT, THE CONTRACTOR SHALL PROVIDE COMPLETE SETS OF COORDINATED SHOP DRAWINGS OF ALL NEW AND EXISTING EQUIPMENT, OTHER TRADES SUCH AS BUT NOT LIMITED TO HVAC AND STRUCTURAL BEAMS, INDICATING CAPACITY, DIMENSIONS AND SEQUENCE OF OPERATION FOR WRITTEN APPROVAL BY THE ARCHITECT AND ENGINEER.

B. INDICATE ON EACH SHOP DRAWINGS SUBMITTED:

1) PROJECT NAME AND LOCATION

2) NAME OF ARCHITECT AND ENGINEER

3) ITEM IDENTIFICATION

4) APPROVAL STAMP OF THE PRIME CONTRACTOR

C. SUBMISSIONS:

1) SUBMISSIONS 11 IN X 17 IN OR SMALLER. IF THE SUBMISSION IS A CATALOG CUT, THEN THE CONTRACTOR SHALL SUBMIT ONE ORIGINAL AND TWO COPIES. OTHERWISE, HE SHALL SUBMIT THREE COPIES. THE ARCHITECT WILL FORWARD THE ORIGINAL AND ONE COPY (TWO COPIES WHEN NO ORIGINAL IS RECEIVED) TO THE ENGINEER. ALL CATALOG CUTS SHALL BE COMPLETE.

2) SUBMISSIONS LARGER THAN 11 IN X 17 IN. SUBMIT TWO PRINTS TO THE ARCHITECT. THE ARCHITECT WILL FORWARD ONE PRINT TO THE ENGINEER.

D. SUBMIT SHOP DRAWINGS FOR THE FOLLOWING

1) PIPING

2) VALVES

3) INSULATION

4) FITTINGS

5) FIXTURES AND EQUIPMENT

4. AS-BUILT DRAWINGS AND EQUIPMENT OPERATIONAL INSTRUCTIONS:

A. UPON COMPLETION AND ACCEPTANCE OF WORK, CONTRACTOR SHALL FURNISH WRITTEN INSTRUCTIONS AND EQUIPMENT MANUALS AND DEMONSTRATE TO THE OWNER THE PROPER OPERATION AND MAINTENANCE OF ALL EQUIPMENT AND APPARATUS FURNISHED UNDER THE CONTRACT.

B. THESE INSTRUCTIONS SHALL BE TYPED ON 8-1/2 X 11 IN. PAPER AND BOUND IN THREE RING BINDERS WITH CLEAR ACETATE COVERS. CONTRACTOR SHALL GIVE THREE COPIES OF THE INSTRUCTIONS TO THE OWNER AND ONE COPY TO THE ENGINEER.

C. THE INSTRUCTION BOOKLET SHALL BEAR THE NAME, ADDRESS AND TELEPHONE NUMBER OF THE PROJECT, ARCHITECT AND ENGINEER.

D. REPRODUCIBLE "AS-BUILT" DRAWINGS PREPARED IN COMPUTER AIDED DRAFTED (AUTO CAD) FORMAT SHALL BE PROVIDED TO THE OWNER INDICATING THE AS INSTALLED CONDITIONS OF THE WORK. A COMPLETE "AS-BUILT" DRAWING FILE SHALL BE PROVIDED TO THE OWNER AFTER COMPLETION OF THE INSTALLATION.

5. GENERAL PROVISIONS FOR PLUMBING WORK:

A. QUALITY ASSURANCE

1. QUALITY AND GAUGE OF MATERIALS: NEW, BEST OF THEIR RESPECTIVE KINDS, FREE FROM DEFECTS AND LISTED BY UNDERWRITERS LABORATORIES, INC., OR BEARING THEIR LABEL. MATERIALS AND EQUIPMENT OF SIMILAR APPLICATION SHALL BE OF SAME MANUFACTURER, EXCEPT AS NOTED.

2. GUARANTEE: ALL MATERIALS AND WORKMANSHIP SHALL BE GUARANTEED FOR A PERIOD OF ONE YEAR FROM DATE OF ACCEPTANCE OF WORK.

B. PRODUCT DELIVERY, STORAGE AND HANDLING

1. MOVING OF EQUIPMENT: WHERE NECESSARY, SHIP IN CARTED SECTIONS OF SIZE TO PERMIT PASSING THROUGH AVAILABLE SPACES.

2. ACCESSIBILITY: FOR OPERATION, MAINTENANCE AND REPAIR. MINOR DEVIATIONS SHALL BE PERMITTED. CHANGES OF MAGNITUDE OR INVOLVING EXTRA COST ARE NOT PERMISSIBLE WITHOUT REVIEW. GROUP CONCEALED ELECTRICAL EQUIPMENT REQUIRING ACCESS WITH EQUIPMENT FREELY ACCESSIBLE THROUGH ACCESS DOORS.

C. PAINT SHALL BE THE BEST GRADE FOR ITS PURPOSE. DELIVER IN ORIGINAL SEALED CONTAINERS AND APPLY IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS. COLORS SHALL BE AS SELECTED. RED LEAD OR ZINC CHROMATE WITH FINISH TO MATCH SURROUNDINGS SHALL BE USED FOR MARRED SURFACES OF STEEL EQUIPMENT. A FIELD-APPLIED ZINC CHROMATE PRIME COAT SHALL BE UTILIZED FOR STEEL OR IRON WORK.

D. BRUSH AND CLEAN WORK PRIOR TO CONCEALING, PAINTING AND ACCEPTANCE. PAINTED EXPOSED WORK SOILED OR DAMAGED. CLEAN AND REPAIR TO MATCH ADJOINING WORK BEFORE FINAL ACCEPTANCE. REMOVE DEBRIS FROM INSIDE AND OUTSIDE OF MATERIAL AND EQUIPMENT.

E. G. FINAL LOCATIONS AND MOUNTING ORIENTATIONS OF ALL PLUMBING FIXTURES SHALL BE VERIFIED BY ARCHITECT.

F. H. ALL ACCESS DOOR LOCATIONS SHALL BE REVIEWED BY ARCHITECT PRIOR TO INSTALLATION.

6. PLUMBING PIPING MATERIALS:

A. SANITARY DRAINAGE AND VENT

1. HUBLESS CAST IRON SOIL PIPE AND FITTINGS WITH EXTRA HEAVY DUTY GASKETED HUBLESS COUPLINGS FOR FOOD SERVICE APPLICATIONS.

2. SCHEDULE 40 PVC PIPE WITH CEMENT TYPE SLIP FIT PIPE AND FITTINGS.

3. GALVANIZED SCHEDULE 40 STEEL PIPE WITH GALVANIZED THREADED MALLEABLE IRON FITTINGS.

B. DOMESTIC WATER

1. TYPE L HARD COPPER TUBING WITH CAST BRONZE OR WROUGHT COPPER FITTINGS AND 95/5 TIN ANTIMONY SOLDER JOINTS.

2. STANDARD WEIGHT RED BRASS PIPE WITH STANDARD WEIGHT CAST BRONZE THREADED FITTINGS.

C. ALL EXPOSED PIPE AND FITTINGS SHALL BE CHROME PLATED BRASS.

D. ALL EXPOSED PIPING PASSING THROUGH WALLS, FLOORS, CEILINGS, AND PARTITIONS SHALL BE PROVIDED WITH CHROME PLATED CAST BRASS ESCUTCHEONS HELD IN PLACE WITH SET SCREWS.

7. VALVES:

A. GATE VALVES: 1. BRONZE RISING STEM, 200 PSI WOG; SIMILAR TO STOCKHAM #B-105, B-109.

B. BALL VALVES: 1. TWO PIECE, BRONZE, END ENTRY, 600 PSI WWP; SIMILAR TO STOCKHAM #S-216 BR-R-T, #S-216 BR-R-S.

C. CHECK VALVES: 1. BRONZE, THREADED CAP, TEFLON DISC; SIMILAR TO STOCKHAM #B310T, B-320T.

8. INSULATION:

A. ALL INSULATION (INCLUDING JACKET, FACING AND ADHESIVE) SHALL HAVE COMPOSITE FIRE AND SMOKE HAZARD RATINGS AS TESTED BY PROCEDURES LISTED IN ASTM E-84, NFPA 255 AND UL 273; NOT EXCEEDING A FLAME SPREAD OF 25 AND A SMOKE DEVELOPED OF 50.

B. ON VALVES AND FITTINGS PROVIDE PRE-MOLDED FIBERGLASS FITTINGS. VAPOR SEAL INSULATION ON "CW".

C. "CW" PIPING: PROVIDE 1/2 IN. THICK FIBERGLASS SECTION PIPE COVERING WITH VAPOR BARRIER JACKET.

D. "HW" PIPING: PROVIDE 1 IN. THICK FIBERGLASS SECTIONAL PIPE COVERING WITH VAPOR BARRIER JACKET.

PLUMBING FIXTURES:

A. PROVIDE ALL FIXTURES WITH STOP VALVES AND SUPPLIES AND FIXTURE TRAPS AS REQUIRED.

B. ALL FIXTURES SHALL BE AS INDICATED ON THE ARCHITECTURAL DOCUMENTS.

9. PIPING SUPPORTS:

A. SUPPORT ALL PIPING FROM BUILDING CONSTRUCTION BY PROVIDING INSERTS, BEAM CLAMPS, STEEL FISHPLATES (IN CONCRETE FILL ONLY), AND ACCEPTABLE BRACKETS. SUBMIT ALL METHODS FOR REVIEW.

B. PROVIDE TRAPEZE HANGERS OF BOLTED ANGLES OR CHANNELS FOR GROUPED LINES AND SERVICES.

C. PROVIDE ADDITIONAL FRAMING WHERE BUILDING CONSTRUCTION IS INADEQUATE. SUBMIT FOR REVIEW.

D. SUSPENDED HORIZONTAL PIPING:

1. SUPPORT ALL PIPING INDEPENDENTLY FROM STRUCTURE USING HEAVY IRON-HINGED TYPE HANGERS, SIMILAR TO GRINNELL CLEVIS NO. 260.

2. PROVIDE ELECTROPLATED SOLID-BAND HANGERS SIMILAR TO AUTO-GRIP, FOR TWO-INCH AND SMALLER PIPE.

3. PROVIDE WALL BRACKETS FOR WALL-SUPPORTED PIPING, AND PROVIDE PIPE SADDLES FOR FLOOR-MOUNTED PIPING.

4. PROVIDE SUPPORTS WITH COPPER LINING FOR UNINSULATED COPPER PIPING.

5. SUSPEND PIPING FROM INSERTS, USING BEAM CLAMPS WITH RETAINING CLAMP OR LOCKNUT, STEEL FISH PLATES, CANTILEVER BRACKETS OR OTHER ACCEPTED MEANS. BEAM CLAMPS SHALL BE SIMILAR TO GRINNELL FIGURES 61, 87, 131, OR 225.

6. SUSPEND PIPING BY RODS WITH DOUBLE NUTS.

7. PROVIDE ADDITIONAL STEEL FRAMING AS REQUIRED AND ACCEPTED WHERE OVERHEAD CONSTRUCTION DOES NOT PERMIT FASTENING HANGER RODS IN REQUIRED LOCATIONS.

8. SUPPORT BRANCH FIXTURE WATER PIPING IN CHASES WITH COPPER-PLATED METAL BRACKETS, SECURED TO STUDS, SIMILAR TO HOLDRITE NOS. 102-18, 107-18, 102-26, OR 101-26.

E. PROVIDE 180 DEGREE ARC GALVANIZED METAL COVERING SHIELDS ON HANGERS FOR INSULATED PIPING WITHOUT INCOMPRESSIBLE INSULATING BLOCK IN INSULATION AT HANGERS.

F. MAXIMUM HANGER SPACING AS INDICATED.

1. PIPE 1 INCH AND SMALLER SHALL BE EVERY 8 FEET.

2. PIPE 1-1/4 INCH AND LARGER SHALL BE EVERY 10 FEET.

3. COPPER TUBING 1-1/4 INCH AND SMALLER SHALL BE EVERY 6 FEET.

4. COPPER TUBING 1-1/2 INCH AND LARGER SHALL BE EVERY 10 FEET.

5. CAST IRON: EVERY 5 FEET AND AT EVERY FITTING OR JOINT.

G. EXPANSION ANCHORS:

1. PROVIDE SMOOTH WALL, NON-SELF-DRILLING INTERNAL PLUG EXPANSION TYPE ANCHORS CONSTRUCTED OF AISC 12L14 STEEL AND ZINC PLATED IN ACCORDANCE WITH FED. SPEC. QQ-A-325 TYPE 1, CLASS 3.

2. DO NOT EXCEED 1/4 OF AVERAGE VALVES FOR A SPECIFIC ANCHOR SIZE USING 2000 PSIG (13,800 KPA) CONCRETE ONLY, FOR MAXIMUM WORKING LOADS.

3. PROVIDE SPACING AND INSTALL ANCHORS IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS.

4. EXPANSION ANCHORS SHALL BE U.L. LISTED AND SIMILAR TO HILTI HDI.

10. TESTS:

A. DOMESTIC WATER PIPING:

1. TEST PIPING HYDROSTATICALLY AT A PRESSURE OF 125 PSI.

2. DURATION OF TEST SHALL BE 2 HOURS WITHOUT A LOSS IN PRESSURE.

B. DRAINAGE AND VENT PIPING:

1. CAP ALL OUTLETS AND FILL PIPING SYSTEM TO OVERFLOWING FROM A POINT AT LEAST 10 FEET ABOVE THE FLOOR.

2. THE WATER LEVEL SHALL REMAIN CONSTANT THROUGHOUT THE TEST DURATION OF 2 HOURS.

C. ARRANGE AND COORDINATE TESTS WITH OWNER 48 HOURS IN ADVANCE. NOTIFY ENGINEER AND ARCHITECT OF TEST DATE AND TIME.

D. DEFECTS DISCLOSED BY THE TESTS SHALL BE REPAIRED OR REPLACED. TESTS SHALL BE REPEATED AS DIRECTED UNTIL ALL WORK IS PROVEN SATISFACTORY.

E. TAKE ALL PRECAUTIONS NECESSARY TO PREVENT DAMAGE TO THE BUILDING AND ITS CONTENTS AS A RESULT OF SUCH TESTS. REPAIR ANY DAMAGE CAUSED.

11. FLUSHING AND DISINFECTING POTABLE WATER SYSTEMS:

a) FLUSHING

1. THE WATER DISTRIBUTION PIPING TO ALL FIXTURES AND OUTLETS SHALL BE FLUSHED UNTIL THE WATER RUNS CLEAR AND FREE OF DEBRIS AND PARTICLES. FAUCET AERATORS OR SCREENS SHALL BE REMOVED DURING FLUSHING OPERATIONS.

b) DISINFECTING

1. THE HOT AND COLD WATER DISTRIBUTION PIPING IN NEW OR RENOVATED POTABLE WATER SYSTEMS SHALL BE DISINFECTED AFTER FLUSHING AND PRIOR TO USE. THE PROCEDURE USED SHALL BE AS FOLLOWS OR AN APPROVED EQUIVALENT:

a. ALL WATER OUTLETS SHALL BE POSTED TO WARN AGAINST USE DURING DISINFECTING OPERATIONS.

b. DISINFECTING SHALL BE PERFORMED BY PERSONS EXPERIENCED IN SUCH WORK.

c. THE WATER SUPPLY TO THE PIPING SYSTEM OR PARTS THEREOF BEING DISINFECTED SHALL BE VALVED-OFF FROM THE NORMAL WATER SOURCE TO PREVENT THE INTRODUCTION OF DISINFECTING AGENTS INTO A PUBLIC WATER SUPPLY OR PORTIONS OF A SYSTEM THAT ARE NOT BEING DISINFECTED.

d. THE PIPING SHALL BE DISINFECTED WITH A WATER-CHLORINE SOLUTION. DURING THE INJECTION OF THE DISINFECTING AGENT INTO THE PIPING, EACH OUTLET SHALL BE FULLY OPENED SEVERAL TIMES UNTIL A CONCENTRATION OF NOT LESS THAN 50 PARTS PER MILLION CHLORINE IS PRESENT AT EVERY OUTLET. THE SOLUTION SHALL BE ALLOWED TO STAND IN THE PIPING FOR AT LEAST 24 HOURS.

e. AN ACCEPTABLE ALTERNATE TO THE 50 PPM/24-HOUR PROCEDURE SHALL BE TO MAINTAIN A LEVEL OF NOT LESS THAN 200 PARTS PER MILLION FOR NOT LESS THAN THREE HOURS. IF THIS ALTERNATE PROCEDURE IS USED, THE HEAVILY CONCENTRATED CHLORINE SHALL NOT BE ALLOWED TO STAND IN THE PIPING SYSTEM FOR MORE THAN 6 HOURS. ALSO, SPECIAL PROCEDURES SHALL BE USED TO DISPOSE OF THE HEAVILY CONCENTRATED CHLORINE IN AN ENVIRONMENTALLY ACCEPTABLE AND APPROVED MANNER.

f. AT THE END OF THE REQUIRED RETENTION TIME, THE RESIDUAL LEVEL OF CHLORINE AT EVERY OUTLET SHALL BE NOT LESS THAN FIVE PARTS PER MILLION. IF THE RESIDUAL IS LESS THAN FIVE PARTS PER MILLION, THE DISINFECTING PROCEDURE SHALL BE REPEATED UNTIL THE REQUIRED MINIMUM CHLORINE RESIDUAL IS OBTAINED AT EVERY OUTLET.

g. AFTER THE REQUIRED RESIDUAL CHLORINE LEVEL IS OBTAINED AT EVERY OUTLET, THE SYSTEM SHALL BE FLUSHED TO REMOVE THE DISINFECTING AGENT. FLUSHING SHALL CONTINUE UNTIL THE CHLORINE LEVEL AT EVERY OUTLET IS REDUCED TO THAT OF THE INCOMING WATER SUPPLY.

h. FURNISH A WRITTEN RECORD OF THE DISINFECTING TEST RESULTS.

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BRIAN D. TANNENHAUS

ISSUED FOR BIDDING
NOT FOR CONSTRUCTION
01/23/2024

NJ PROFESSIONAL ENGINEER
NO. GE 45801

DATE:_____

no.	by	description	date
		ISSUED FOR BIDDING	01/23/2024

revisions

CAPE MAY BOARDWALK BATHROOMS

702 BEACH AVENUE

CAPE MAY, NJ

project title

PLUMBING SPECIFICATIONS

drawing name

scale AS NOTED

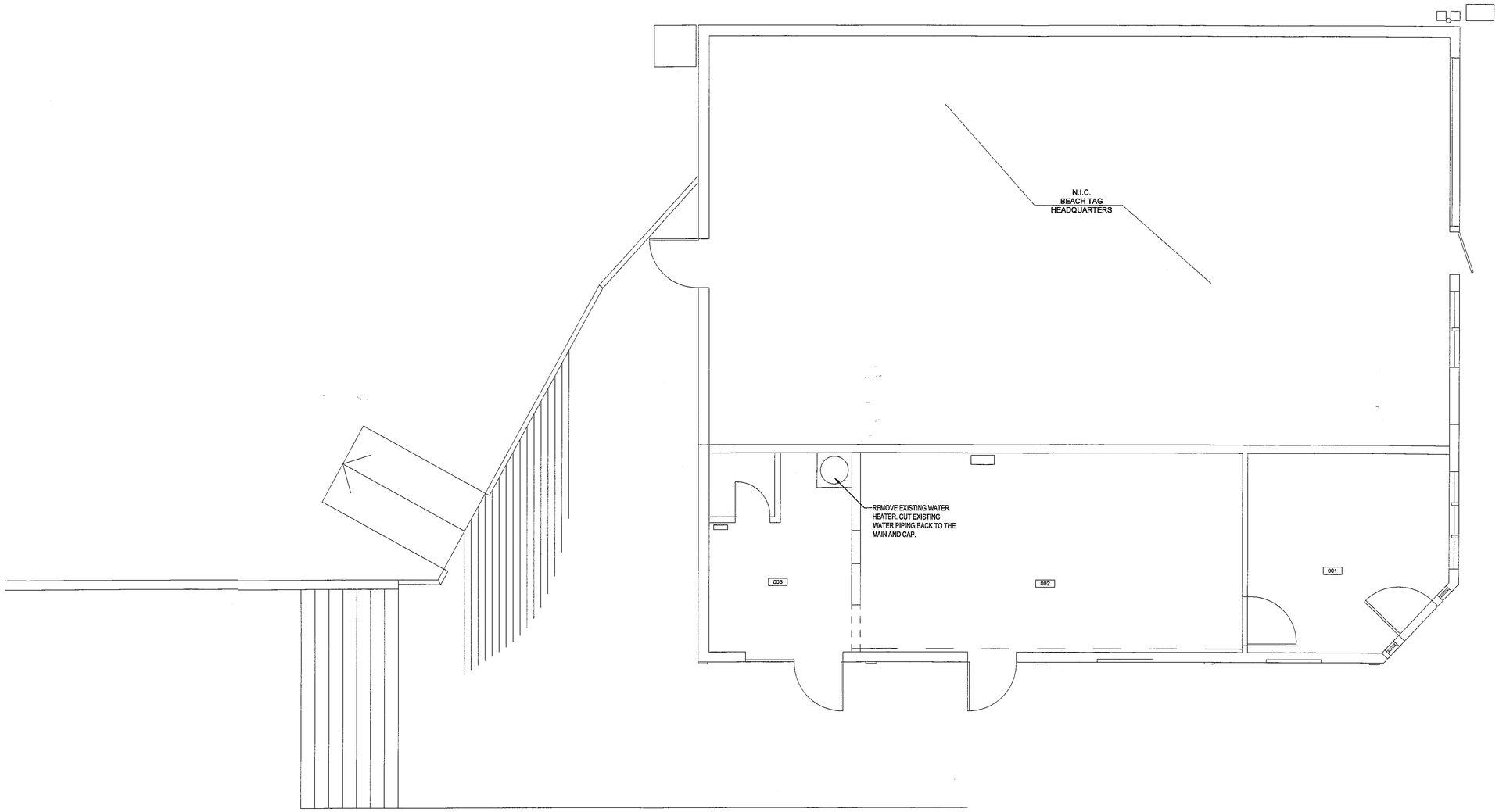
date 01/23/24

drawn by RL

project no. 220121

P1.2

drawing no.



DEMOLITION FLOOR PLAN

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

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drawing name

scale AS NOTED

date 01/23/24

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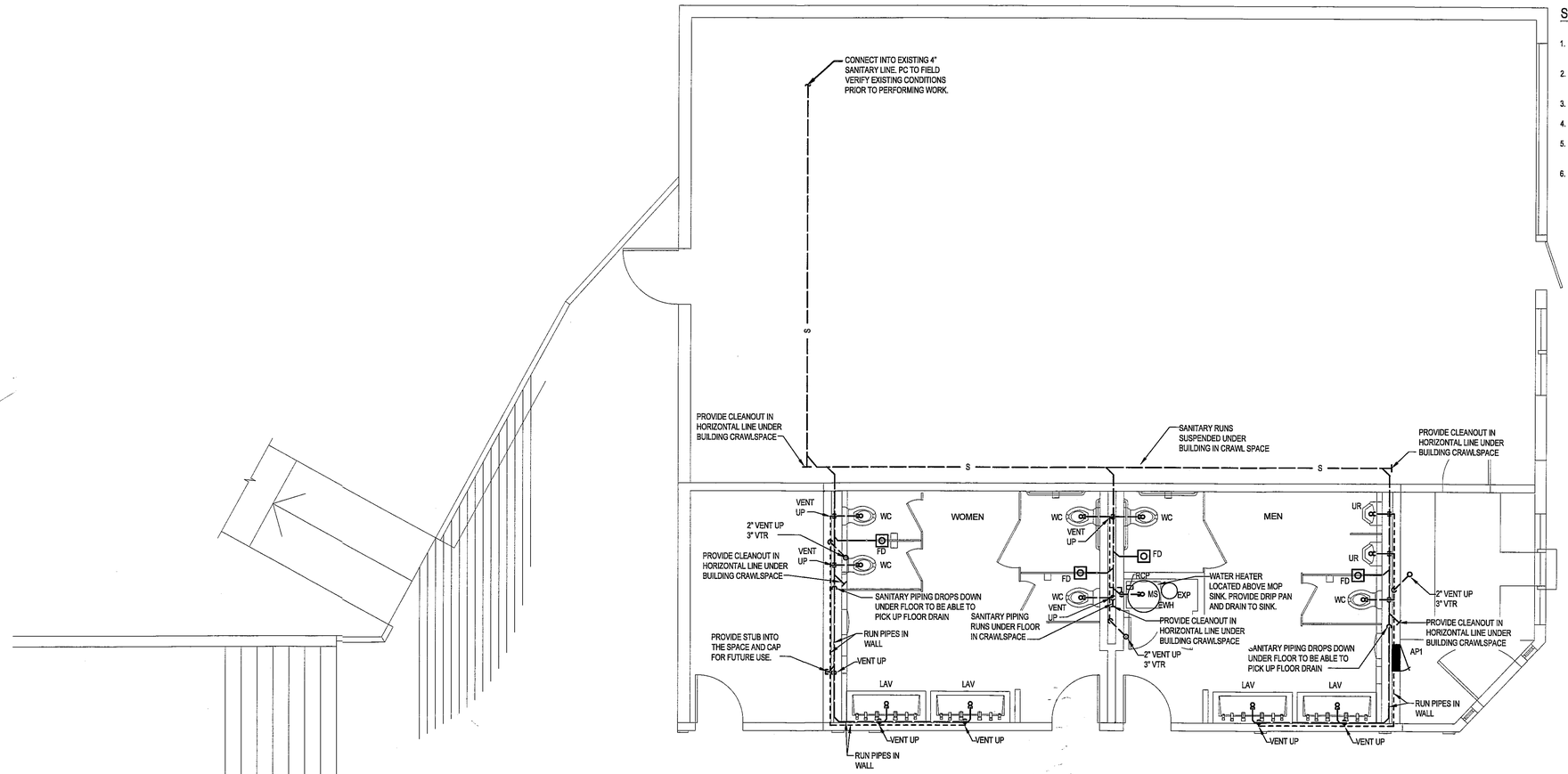
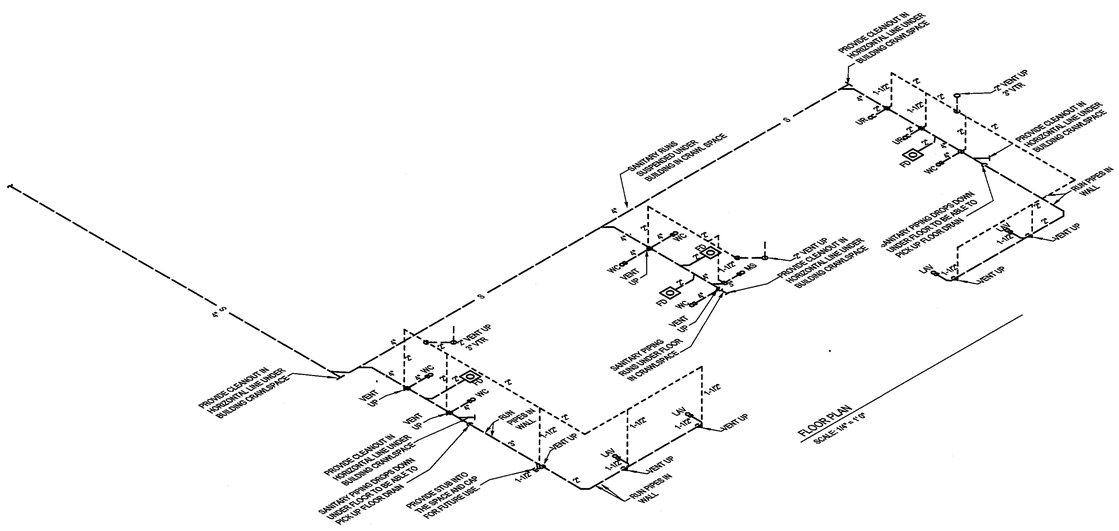
project no. 220121

drawing no. P2.1



FLOOR PLAN

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



FLOOR PLAN

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

SANITARY GENERAL NOTES:

1. UNLESS OTHERWISE NOTED FLOOR DRAINS AND/OR STANDPIPES SHALL BE TRAPPED JUST BELOW THE FLOOR.
2. EXISTING SANITARY LOCATION IS APPROXIMATE. FIELD VERIFY ALL FINAL LOCATIONS PRIOR TO BIDDING.
3. REFER TO RISER DIAGRAM FOR ADDITIONAL INFORMATION.
4. SEE PLUMBING SCHEDULES FOR FIXTURE PIPE CONNECTION SIZES.
5. CONDENSATE PIPING PROVIDED BY PLUMBING CONTRACTOR. REFER TO REFRIGERATION PLANS FOR INFORMATION.
6. SLAB IS STRUCTURAL TYPE. ALL PIPES AND UTILITIES UNDER FLOOR NEED TO BE HUNG FROM STRUCTURAL SLAB. PC SHALL COORDINATE WITH STRUCTURAL PLANS AND GC PRIOR TO FOUNDATIONS BEING POURED. FAILURE TO COORDINATE WILL RESULT IN THE DENIAL OF EXTRAS.

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PLUMBING FLOOR PLAN

drawing name

scale AS NOTED

date 01/23/24

drawn by RL

project no. 220121

drawing no. P3.1

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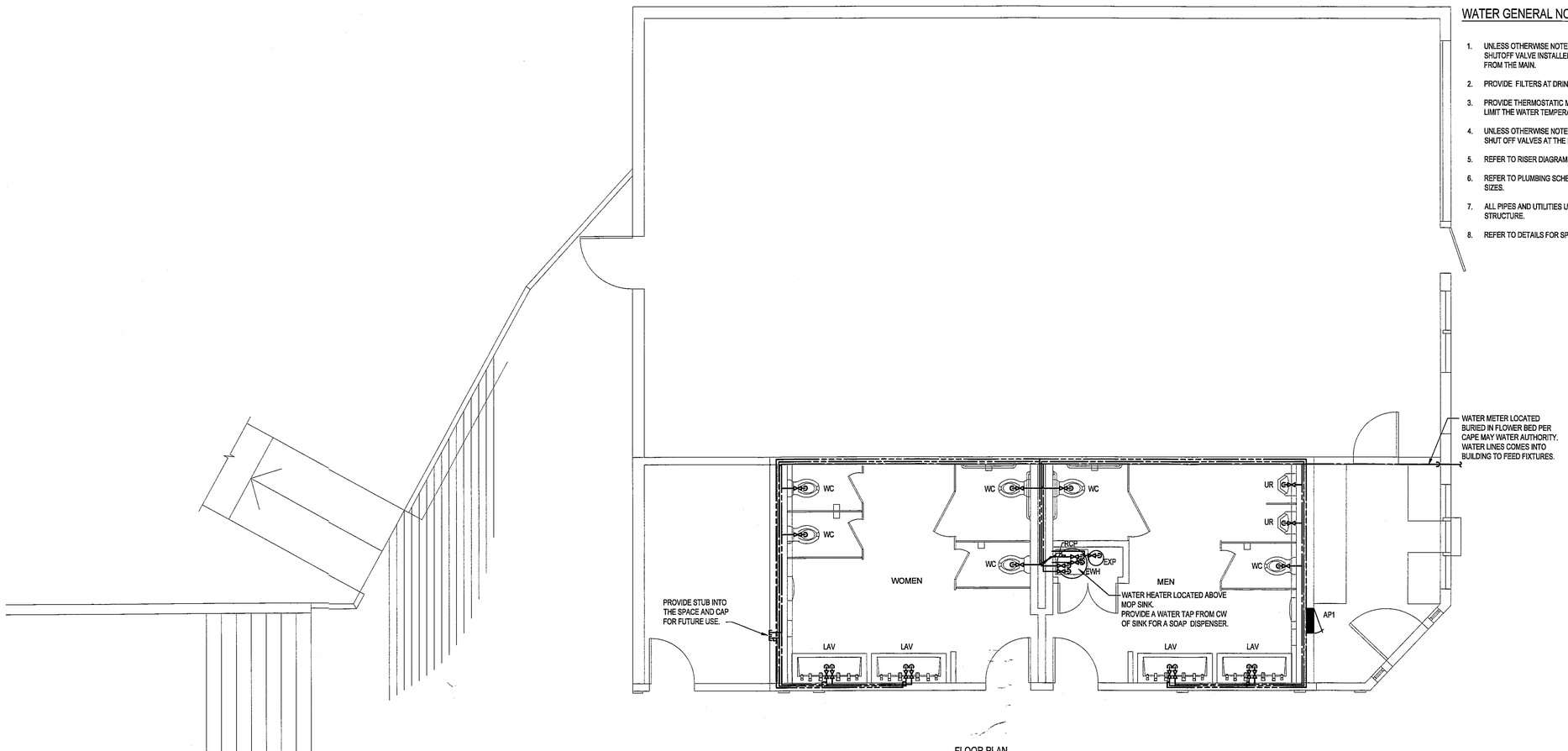
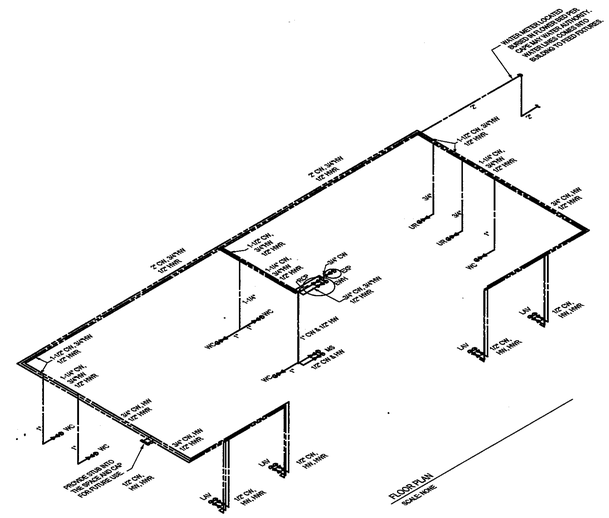


FLOOR PLAN

SCALE: 1/4" = 1' 0"

WATER GENERAL NOTES:

1. UNLESS OTHERWISE NOTED, ALL BRANCH PIPING SHALL HAVE A SHUTOFF VALVE INSTALLED WHERE THE BRANCH TAKE OFF BEGINS FROM THE MAIN.
2. PROVIDE FILTERS AT DRINKING FOUNTAINS.
3. PROVIDE THERMOSTATIC MIXING VALVES FOR ALL HAND SINKS AND LIMIT THE WATER TEMPERATURE TO 105°F
4. UNLESS OTHERWISE NOTED, ALL PLUMBING FIXTURES SHALL HAVE SHUT OFF VALVES AT THE FIXTURE.
5. REFER TO RISER DIAGRAM FOR ADDITIONAL INFORMATION.
6. REFER TO PLUMBING SCHEDULES FOR FIXTURE PIPE CONNECTION SIZES.
7. ALL PIPES AND UTILITIES UNDER FLOOR NEED TO BE HUNG FROM STRUCTURE.
8. REFER TO DETAILS FOR SPECIFIC INSTALLATION REQUIREMENTS.



FLOOR PLAN

SCALE: NONE

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702 BEACH AVENUE

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PLUMBING SUPPLY PLAN

drawing name

scale AS NOTED

date 01/23/24

drawn by RL

project no. 220121

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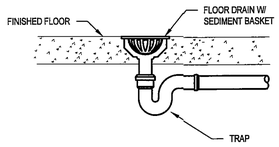
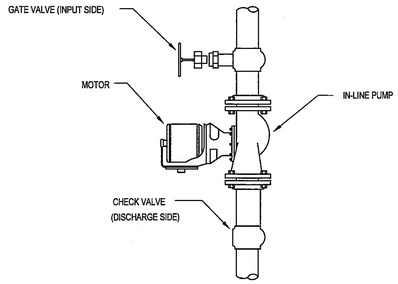


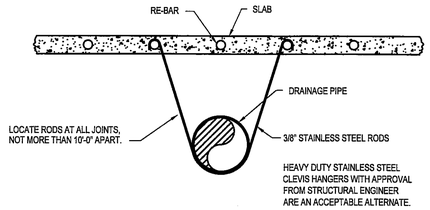
FLOOR DRAIN DETAIL

SCALE: NONE



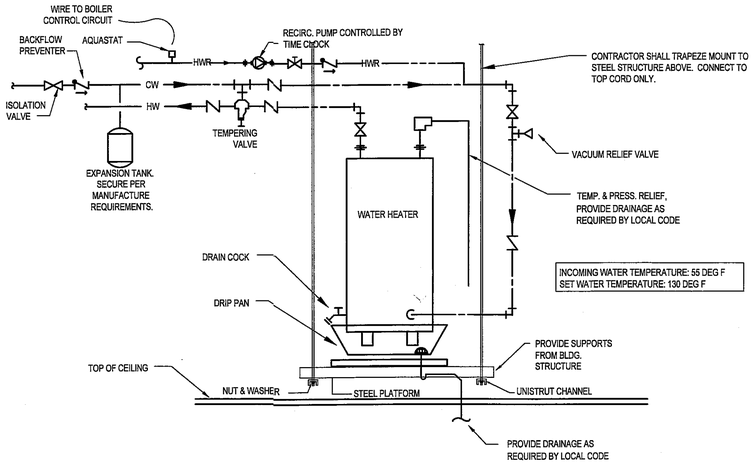
TYPICAL INLINE PUMP DETAIL

SCALE: NONE



TYPICAL PIPE HANGER BELOW SLAB DETAIL

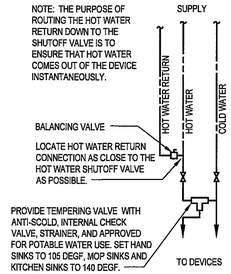
SCALE: NONE



WATER HEATER DETAIL

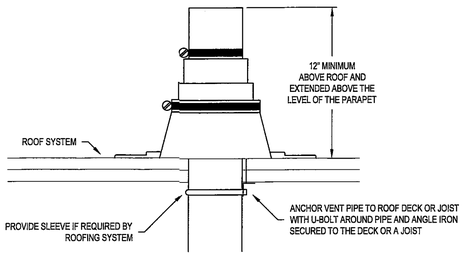
SCALE: NONE

NOTE: THE PURPOSE OF ROUTING THE HOT WATER RETURN DOWN TO THE SHUTOFF VALVE IS TO ENSURE THAT HOT WATER COMES OUT OF THE DEVICE INSTANTANEOUSLY.



HOT WATER RETURN AT WATER DEVICE
AND TEMPERING VALVE.

SCALE: NONE



REFER TO PLANS FOR VTR PIPE SIZES AND LOCATIONS. LOCATE VTR MINIMUM TEN FEET HORIZONTAL OR THREE FEET VERTICAL ABOVE ANY BUILDING OPENING OR FRESH AIR INTAKE, AND ONE FOOT FROM ANY VERTICAL SURFACE. PROVIDE 1" FIBERGLASS INSULATION WITH ALL-SERVICE JACKET ON VENT PIPE INSIDE BUILDING WITHIN SIX FEET OF VENT THRU ROOF LOCATION. FLASHING AND COUNTER FLASHING ARE TO BE COMPATIBLE WITH THE ROOFING SYSTEM.

VENT THROUGH ROOF DETAIL

SCALE: NONE

WATER OR STEAM PIPE HANGER SPACING (SCHEDULE 40 OR 80 STEEL)

PIPE SIZE	SCH. 40 WEIGHT / FT. WITH WATER (IN LBS.)	SCH. 80 WEIGHT / FT. WITH WATER (IN LBS.)	MAX HANGER SPACING (WATER)	ROD SIZE
1/2"	.881	1.188	7'	1/2"
3/4"	1.361	1.657	7'	1/2"
1"	2.054	2.481	7'	1/2"
1-1/4"	2.917	3.545	7'	1/2"
1-1/2"	3.601	4.395	7'	1/2"
2"	5.1	6.3	10'	3/4"
2-1/2"	7.66	9.490	10'	3/4"
3"	10.77	13.11	10'	3/4"
4"	16.29	13.95	10'	3/4"
6"	31.46	39.83	15'	3/4"
8"	50.16	63.11	15'	1"
10"	74.57	95.37	20'	1"
12"	101.92	132.42	20'	1"

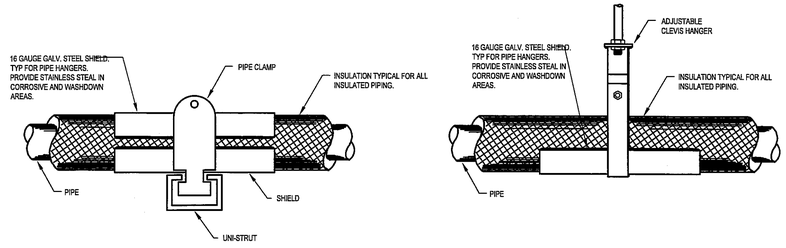
WATER PIPE HANGER SPACING (COPPER TUBE)

PIPE SIZE	WEIGHT / FT. WITH WATER (IN LBS.)	MAX HANGER SPACING (WATER)	ROD SIZE
1/2"	0.428	5'	1/2"
3/4"	0.83	5'	1/2"
1"	1.175	6'	1/2"
1-1/4"	1.564	6'	1/2"
1-1/2"	2.106	8'	1/2"
2"	3.367	8'	3/4"
2-1/2"	4.941	8'	3/4"
3"	6.874	10'	3/4"
4"	11.566	10'	3/4"
6"	25.058	10'	3/4"
8"	45.453	16'	1"
10"	70.613	16'	1"
12"	101.294	16'	1"

NOTE:

THE HANGER SPACING AND ROD SIZES ARE FROM ASHRAE'S 2004 HANDBOOK-HVAC SYSTEMS AND EQUIPMENT TABLE 6 PAGE 41.7, "SUGGESTED HANGER SPACING AND ROD SIZE FOR STRAIGHT HORIZONTAL RUNS"

THE WEIGHT PER FOOT IS FROM TABLE 2 AND TABLE 3 ON PAGE 41.3 AND 41.4.



PIPE HANGER SPACING REQUIREMENTS

SCALE: NONE

BD engineering

NJ CERTIFICATE OF AUTHORIZATION - 24GA28116100
BD Engineering, LLC
30 Park Road, Suite 4, Tinton Falls, NJ 07724 732-886-5432

BRIAN D. TANNENHAUS

ISSUED FOR BIDDING
NOT FOR CONSTRUCTION
01/23/2024

NJ PROFESSIONAL ENGINEER
NO. GE 45801

DATE:_____

no.	by	description	date
		ISSUED FOR BIDDING	01/23/2024

revisions

CAPE MAY
BOARDWALK BATHROOMS
702 BEACH AVENUE
CAPE MAY, NJ

project title
PLUMBING DETAILS

drawing name

scale AS NOTED

date 01/23/24

drawn by RL

project no. 220121

P5.1
drawing no.

1/23/2024 4:24 PM