# **ARPA Renovations**

# GIRLS INC. of Meriden

130 Lincoln St, Meriden, CT 06451 **CWA PROJECT NO: 2313** 



ISSUED FOR BIDDING **MARCH 12, 2024** 

**ARCHITECT** 



**MEP ENGINEER** 

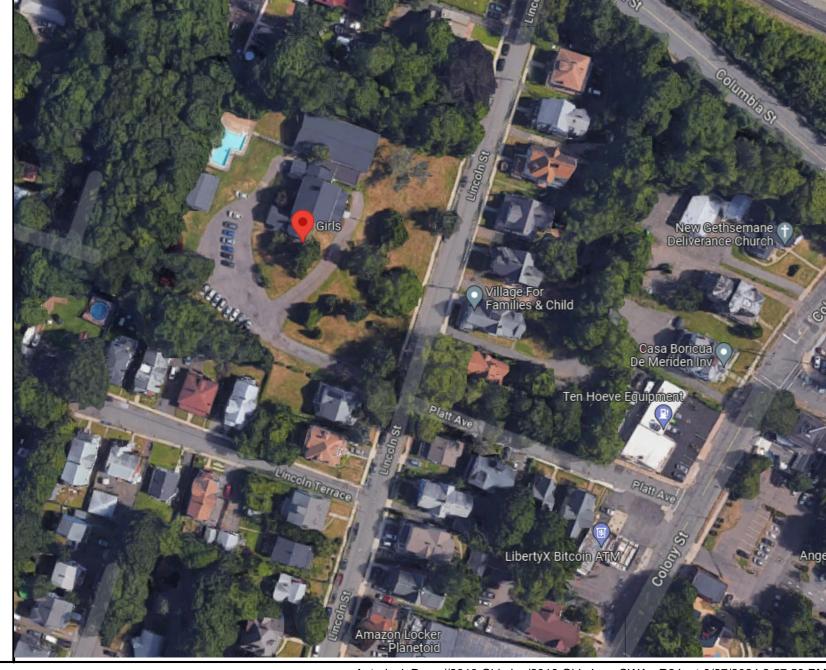


**ENVIRONMENTAL** CONSULTANT

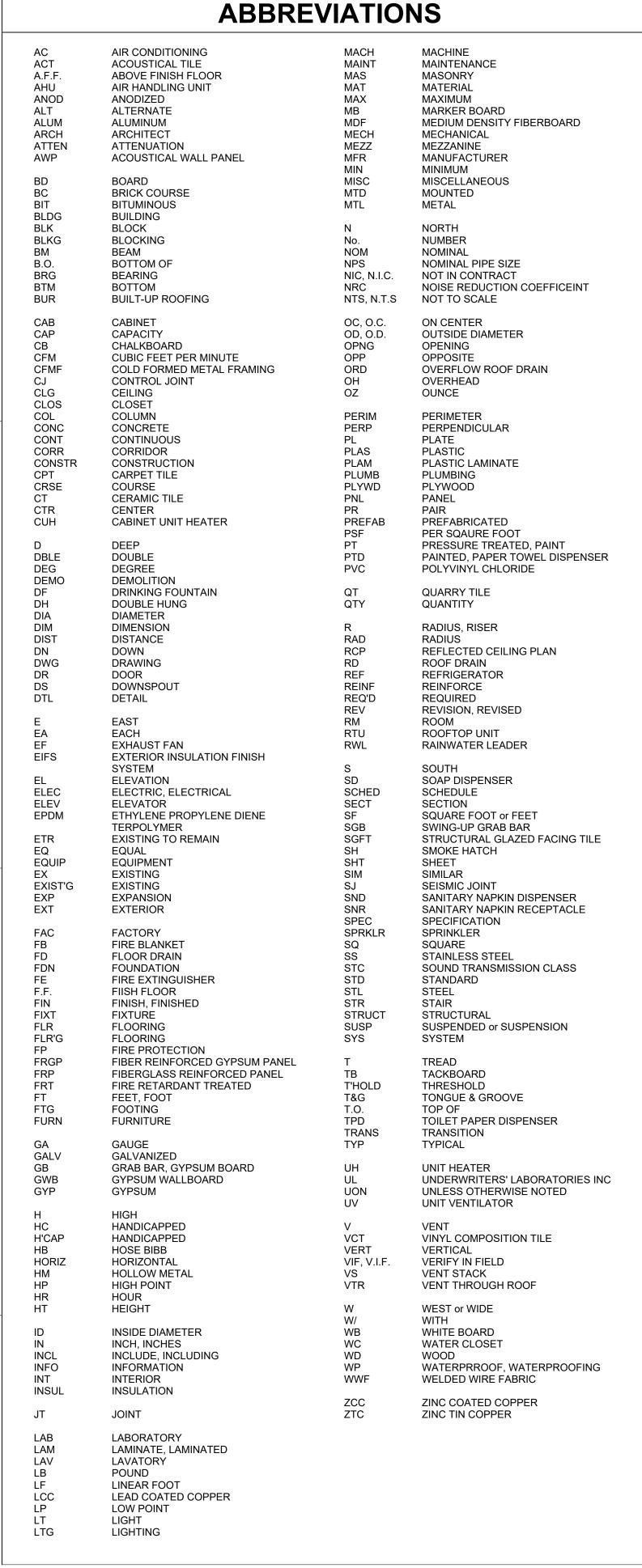


LIST OF DRAWINGS SHEET NAME GENERAL CODE INFORMATION, GENERAL NOTES, SYMBOLS & ABBREVIATIONS CD101 SITE DEMOLITION PLAN C101 SITE PLAN SITE DETAILS C502 ENLARGED EXTERIOR CONCRETE RAMP PLAN & DETAILS CITY OF MERIDEN STANDARD SIDEWALK & DRIVEWAY DETAILS CITY OF MERIDEN STANDARD PAVEMENT DETAILS ARCHITECTURAL AD100 BASEMENT DEMOLITION PLAN AD101 FIRST FLOOR DEMOLITION PLAN AD102 SECOND FLOOR DEMOLITION PLAN AD103 THIRD FLOOR DEMOLITION PLAN AD201 BUILDING ELEVATIONS - DEMOLITION A100 BASEMENT FLOOR PLAN A101 FIRST FLOOR PLAN A102 SECOND FLOOR PLAN THIRD FLOOR PLAN A113 THIRD FLOOR REFLECTED CEILING PLANS - DEMOLITION & NEW A120 ROOF PLAN NORTH & EAST BUILDING ELEVATIONS A202 SOUTH & WEST BUILDING ELEVATIONS A203 ENLARGED REAR PORCH ELEVATIONS A204 PARTIAL WEST BUILDING ELEVATIONS & DETAILS A501 DETAILS HAZARDOUS MATERIAL ABATEMENT H100 BASEMENT ABATEMENT PLAN H101 FIRST FLOOR ABATEMENT PLAN H102 SEOND FLOOR ABATEMENT PLAN H103 THIRD FLOOR ABATEMENT PLAN H120 ROOF ABATEMENT PLAN H201 BUILDING ELEVATIONS - ABATEMENT H202 ENLARGED REAR PORCH ELEVATIONS - ABATEMENT PLUMBING DP.100 BASEMENT PLUMBING DEMOLITION PLAN P.100 BASEMENT PLUMBING PLAN P.101 FIRST FLOOR PLUMBING PLAN P.200 PLUMBING DETAILS, LEGENDS, NOTES & SCHEDULES P.201 PLUMBING SPECIFICATIONS SITE UTILITIES SU.100 SITE UTILITY PLAN MECHANICAL DM.100 BASEMENT MECHANICAL DEMOLITION PLAN DM.101 FIRST FLOOR MECHANICAL DEMOLITION PLAN DM.102 SECOND FLOOR MECHANICAL DEMOLITION PLAN M.100 BASEMENT MECHANICAL PLAN M.101 FIRST FLOOR MECHANICAL PLAN M.102 SECOND FLOOR MECHANICAL PLAN M.103 THIRD FLOOR MECHANICAL PLAN M.200 MECHANICAL NOTES, LEGEND & DETAILS M.201 MECHANICAL DETAILS M.202 MECHANICAL SCHEDULES M.203 MECHANICAL VRF PIPING & WIRING DIAGRAMS M.204 MECHANICAL SPECIFICATIONS ELECTRICAL DE.100 BASEMENT ELECTRICAL DEMOLITION PLAN DE.101 FIRST FLOOR ELECTRICAL DEMOLITION PLAN DE.102 SECOND FLOOR ELECTRICAL DEMOLITION PLAN DE.103 THIRD FLOOR ELECTRICAL DEMOLITION PLAN E.100 BASEMENT ELECTRICAL PLAN E.101 FIRST FLOOR ELECTRICAL PLAN E.102 SECOND FLOOR ELECTRICAL PLAN E.103 THIRD FLOOR ELECTRICAL PLAN E.201 ELECTRICAL POWER RISER E.202 ELECTRICAL SCHEDULES E.203 ELECTRICAL NOTES, LEGEND & SCHEDULES E.204 ELECTRICAL SPECIFICATIONS E.205 ELECTRICAL SPECIFICATIONS CONTINUED

### **LOCATION MAP**



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# **GRAPHIC SYMBOLS LEGENDS DIMENSIONS** Tick (slash) mark indicates dimension to corner or edges of partitions and other building elements Centerline of column grids or as indicateded on Drawings \_\_\_4' - 6"\_ (V.I.F.) Verify Dimension in Field **DETAIL TITLE IDENTIFIER** Detail location on Drawing: 1st character (letter) and 2nd character (number) correspond to letters running vertically and numbers running horizontally along edges of drawing Detail scale on full size Drawing Graphic Scale REFERENCE IDENTIFIERS Detail Number & Location SECTION PLAN DETAIL Detail Number Detail Number \AXXX<del>/-</del> Drawing Number \axxx/<del>-</del> Drawing Numbe **ELEVATION** Drawing Number **ROOM NAME** — Room Name **201** Room Number Detail Number N.I.C. — Not In Contract **ROOM IDENTIFIER** INTERIOR ELEVATION A1 — **NORTH INDICATOR** METAL STUD PARTITION TYPE F1.0 MODULAR WALL PANEL **ASSEMBLY TYPE KEYNOTE** A )— - — - — - — -STRUCTURAL GRID **FLOOR ELEVATION** & COLUMN (EXISTING) OR WORK POINT **REVISION TAG**

# **GENERAL NOTES**

- 1. THE FOLLOWING NOTES APPLY TO ALL WORK AND DRAWINGS IN PROJECT SCOPE.
- EXERCISE CARE NOT TO DAMAGE EXISTING BUILDING ELEMENTS AND FINISHES TO REMAIN DURING CONSTRUCTION. IN THE EVENT THAT DAMAGE DOES OCCUR PATCH/REPAIR OR REPLACE DAMAGED ELEMENTS OR FINISHES IN KIND AND/OR TO MATCH EXISTING.
- 3. ALL PIPING PENETRATIONS THROUGH EXISTING MASONRY WALLS SHALL BE DRILLED AND SLEEVED. PENETRATIONS THOUGH INTERIOR WALLS SHALL BE FIRE SAFED WITH DESIGNATED UL SYSTEMS. PENETRATIONS THROUGH EXTERIOR WALLS SHALL BE SEALED WEATHERTIGHT.
- 4. PROVIDE TEMPORARY BARRICADES AND DUST ABATEMENT AS REQUIRED BY OWNER.
- 5. THE PREMISIS SHALL BE KEPT FREE FROM ACCUMULATION OF TRASH AND CONSTRUCTION DEBRIS AT ALL TIMES, DISPOSE OF EXCESS TRASH AND DEBRIS OFF-SITE IN A SAFE, ACCEPTABLE MANNER,
- 6. LOCATE ALL EXISTING, EASEMENTS, UTILITIES AND BUILDING SERVICES, EXPOSED AND CONCEALED, PRIOR TO START OF WORK.
- FIELD VERIFY EXISTING CONDITIONS AND DIMENSIONS PRIOR TO COMMENCEMENT OF WORK.
- REPORT ANY DISCREPANCIES TO ARCHITECT PRIOR TO PROCEEDING. DIMENSIONS INDICATED ON DRAWINGS ARE TO BE USED FOR CONSTRUCTION. DO NOT SCALE
- DRAWINGS.
- 9. PARTITION DIMENSIONS SHOWN ON FLOOR PLANS ARE TO FINISH FACE OF WALL.
- 10. FIELD VERIFY ALL (±) AND (V.I.F) DIMENSIONS PRIOR TO START OF WORK. REPORT ANY DISCREPANCIES THAT WILL AFFECT NEW WORK TO ARCHITECT PRIOR TO PROCEEDING.
- 11. DOOR FRAMES AT CORNERS OF ROOMS ADJACENT TO INTERSECTING WALLS SHALL BE INSTALLED WITH THE DOOR OPENING 4" FROM INSIDE CORNER OF WALLS UNLESS OTHERWISE INDICATED. MEASUREMENT SHALL BE FROM FINISH FACE OF WALL.
- 12. IF INFORMATION ON DRAWINGS IS UNCLEAR OR ADDITIONAL DIMENSIONS ARE REQUIRED NOTIFY ARCHITECT PRIOR TO PROCEEDING WITH WORK.
- CONDITION IS THE SAME OR SIMILAR THROUGHOUT UNLESS OTHERWISE INDICATED.

13. THE TERM "TYPICAL" OR "TYP" INDICATED ON THE CONTRACT DOCUMENTS SHALL MEAN THAT THE

- 14. ALL EXISTING FINISHES AND BUILDING ELEMENTS AFFECTED BY DEMOLITION AND NEW WORK SHALL BE PATCHED TO MATCH EXISTING, WHETHER OR NOT SPECIFICALLY CALLED FOR.
- 15. ALL WORK SHALL BE PERFORMED IN A UNIFORM, ACCURATE MANNER AS REQUIRED TO PROVIDE NEAT, STRAIGHT LINES FREE FROM DEFECTS, OVERLAPS AND IMPERFECTIONS. WORK SHALL BE INSTALLED LEVEL, PLUMB OR FLUSH WITH ADJOINING MATERIALS (WHERE APPLICABLE). WORK OF EACH TRADE SHALL MEET OR EXCEED NATIONALLY RECOGNIZED AND/OR PUBLISHED STANDARDS. WHERE THE CONTRACT DOCUMENTS ARE MORE STRINGENT THAN THE AFOREMENETIONED STANDARDS WORK SHALL BE PERFORMED IN ACCORDANCE WITH SUCH.
- 16. COORDINATE WITH AUTHORITIES HAVING JURISDICTION AND PROVIDE ALL REQUIRED TEMPORARY FIRE AND LIFE SAFETY PROVISIONS DURING CONSTRUCTION.
- 17. PROVIDE PORTABLE FIRE EXTINGUISHERS DURING CONSTRUCTION AS REQUIRED BY CODE AND AUTHORITY HAVING JURISDICTION. THESE NOTES APPLY TO ALL CONTRACT DRAWINGS.

# **GENERAL DEMOLITION NOTES**

- THE FOLLOWING NOTES APPLY TO ALL WORK AND DRAWINGS IN PROJECT SCOPE.
- THE DEMOLITION DRAWINGS IN THIS SET ARE TO BE USED AS A GUIDE AND ARE NOT INTENDED TO BE ALL INCLUSIVE OF REQUIRED WORK. ALL WORK SHOWN IN BROKEN LINE SHALL BE REMOVED UNLESS OTHERWISE NOTED. INSPECT WORK AREA TO VERIFY FULL EXTENT OF REQUIRED DEMOLITION PRIOR TO START OF WORK, NOTIFY ARCHITECT OF ANY DISCREPANCIES OR QUESTIONS PRIOR TO PROCEEDING.
- ALL WORK TO BE DEMOLISHED SHALL BE REMOVED IN ITS ENTIRETY, INCLUDING ALL RELATED FASTENERS AND COMPONENTS, AND AS REQUIRED TO PERFORM/INSTALL NEW WORK SHOWN ON
- NOTIFY BUILDING OWNER OF ALL MATERIALS OR EQUIPMENT, INTACT OR FUNCTIONAL AFTER REMOVAL, PRIOR TO DISPOSAL OR REMOVAL FROM SITE.
- BRACE, SUPPORT AND/OR TEMPORARILY SHORE EXISTING WORK, PARTICULARLY LOAD BEARING COMPONENTS, PRIOR TO AND DURING DEMOLITION AND INSTALLATION OF NEW WORK.
- PROVIDE TEMPORARY PROTECTION AS REQUIRED AND EXERCISE CARE NOT TO DAMAGE EXISTING BUILDING ELEMENTS AND FINISHES TO REMAIN. IN THE EVENT THAT THIS UNAVOIDABLE ALL EXISTING WORK THAT IS DAMAGED SHALL BE PATCHED/REPAIRED TO MATCH EXISTING IN MATERIAL, FINISH AND COLOR. WORK THAT CANNOT BE PROPERLY PATCHED/REPAIRED SHALL BE REPLACED IN KIND AT THE DISCRETION OF THE ARCHITECT.
- LOCATE ALL EXISTING UTILITIES, BUILDING SERVICES AND EASEMENTS WITHIN THE WORK AREA PRIOR TO START OF DEMOLITION WORK, EXERCISE CARE NOT TO DAMAGE EXISTING WORK TO REMAIN. IN THE EVENT THAT THIS UNAVOIDABLE ALL EXISTING WORK THAT IS DAMAGED SHALL BE PATCHED/REPAIRED TO MATCH EXISTING. WORK THAT CANNOT BE PROPERLY PATCHED/REPAIRED SHALL BE REPLACED IN KIND AT THE DISCRETION OF THE ARCHITECT.
- PLUMBING, FIRE PROTECTION, ELECTRICAL AND HVAC SYSTEMS NOT SUBJECT TO DEMOLITION SHALL REMAIN FUNCTIONAL AND BE PROTECTED AS REQUIRED OR SHALL BE RE-ROUTED. WHERE SHUT DOWN IS UNAVOIDABLE NOTIFY BUILDING OWNER AT LEAST 72 HOURS IN ADVANCE OF ANY NECESSARY INTERRUPTION TO SERVICE PRIOR TO START OF WORK.
- 9. AT EXISTING WALLS TO BE REMOVED EXISTING ELECTRICAL RECEPTACLES AND RELATED WIRING SHALL BE DISCONNECTED PRIOR TO REMOVAL
- 10. ALL EXPOSED NON-FUNCTIONAL PIPING, WIRING, CONDUIT, BACK BOXES, DEVICES, FIXTURES, ETC ABANDONED AS A RESULT OF THIS PROJECT SHALL BE REMOVED, WHETHER OR NOT SPECIFICALLY
- ABANDONED AND CAPPED BELOW FLOOR LEVEL.

11. ALL EXISTING UTILITIES TO BE REMOVED THAT ARE STUBBED UP FROM THE FLOOR SHALL BE

- 12. SAW CUT EXISTING BITUMINOUS PAVEMENT AND CONCRETE FLOOR SLABS TO BE REMOVED IN CLEAN, STRAIGHT LINES.
- 13. WHERE DEMOLITION WORK CAUSES UNEVENNESS OR VOIDS IN THE EXISTING CONCRETE FLOOR SLAB PATCH AND LEVEL EXISTING FLOOR SURFACE TO RECEIVE NEW FINISHES.

# **CODE INFORMATION**

PROJECT SCOPE:

#### IEBC Level 2 alterations to the existing building including:

- · Replacment of existing HVAC equipment, including boiler, water heater, AHUs, condensing units and fan coil units.
- installation of new exhaust system for existing toilet rooms and Third Floor of building.
- Installation of a new gas service from Lincoln Street

Installation of a concrete walk, ramp and stairs at the West side of the building.

- Electrical system upgrade.
- Replacement of the Basement brick floor with a concret slab. Waterproofing of existing Basement masonry foundation walls.
- Replacment of Third Floor ceiling to facilitate installation of exhaust sytem. HAZMAT abatement at araeas affected by work of this project.
- 2. APPLICABLE CODES:
- 2022 CONNECTICUT STATE BUILDING CODE which includes:

- Adopted Model Codes: 2021 International Building Code 2017 ICC/ANSI A117.1 Accessible and Usable Buildings and Facilities
- 2021 International Existing Building Code
- 2021 International Plumbing Code 2021 International Mechanical Code
- 2021 International Energy Conservation Code 2020 National Electrical Code (NFPA 70)
- Connecticut Documents: 2022 Connecticut Amendments to the Adopted Model Codes Listed
- 2022 CONNECTICUT STATE FIRE SAFETY CODE which includes:
- Adopted Model Code: 2021 International Fire Code
- Connecticut Documents: 2022 Connecticut Amendments to the 2021 International Fire Code
- 2018 CONNECTICUT STATE FIRE PREVENTION CODE which includes:
- Adopted Model Code: NFPA 1 Fire Code, 2022 Edition
- 3. USE AND OCCUPANCY

#### B: Business

No change of use as part of this Project

4. BUILDING HEIGHT AND AREA

Height: Not applicable. No Change in height as part of this project. Area: Not applicable. No change in area as part of this project.

- 5. CONSTRUCTION CLASSIFICATION
- Existing Construction Type: IIB, Non-combustible, unprotected
- 6. FIRE RESISTANCE RATING OF ELEMENTS (See Code Plans)
- 9. INTERIOR FINISHES

Not Appolicable: No chages to existing finishes as part of this project.

- 8. FIRE PROTECTION SYSTEMS
- Automatic Sprinkler System: No
- Notification: Audible/visible alarms. No chage as part of this project
- Detection: Heat detectors & manual pull stations. No change as part of this project. Portable Fire Extinguishers: Provide at least one portable fire extinguisher in accordance with Section 906 of the International Fire Code at each of the following locations in the the Project
- Rooms being used for storage during construction Rooms or areas where combustible and flammable liquids are being used.
- Portable fire extinguisher locations and types shall be submitted to the Authority Having Jurisdiction (AHJ) and the Architect for review and approval prior to installation.
- 9. OCCUPANT LOAD & EGRESS

Not applicable. No change as part of this project

10. ACCESSIBILITY

Designated accessible building

11. PLUMBING FIXTURE COUNT

Not Applicable. No chages to plumbing fixtures as part of this project.

12. MODIFICATIONS

 Existing: No known existing modifications New: None

OWNER

PROFESSIONAL SEAL

Meriden, CT 06451

www.girlsincmeriden.org

ARCHITECT

203 235 7146



New Haven, CT 06511

203 776 0184 www.cwarchitectsllc.com

MEP ENGINEER

85 Willow Street

INNOVATIVE ENGINEERING SERVICES, LLC IES AN INTEGRATED ENGINEERING + DESIGN FIRM

33 North Plains Industrial Rd Wallingford, CT 06492

203 467 4370 iesllc.biz

ENVIRONMENTAL CONSULTANT



DESIGNED BY: JOHN LUBY

CT ASBESTOS PROJECT DESIGNER LICENSE #19 CT LEAD PLANNER/PROJECT DESIGNER LICENSE #986

ISSUED FOR BIDDING

MARCH 12, 2024

**DESCRIPTION** 

PROJECT NO:

MARK DATE

CWA PROJECT NO.: 2313

DRAWN BY:

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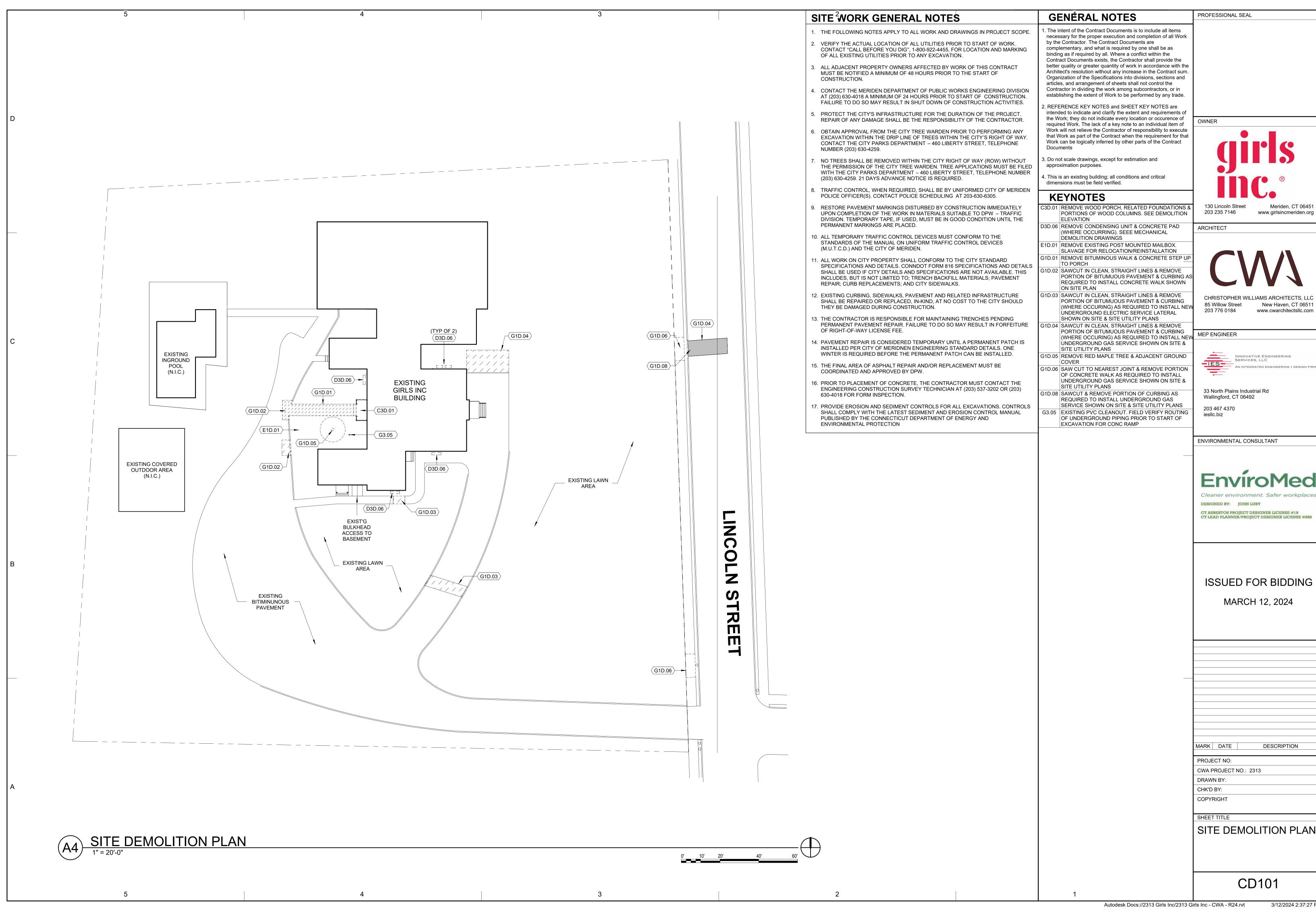
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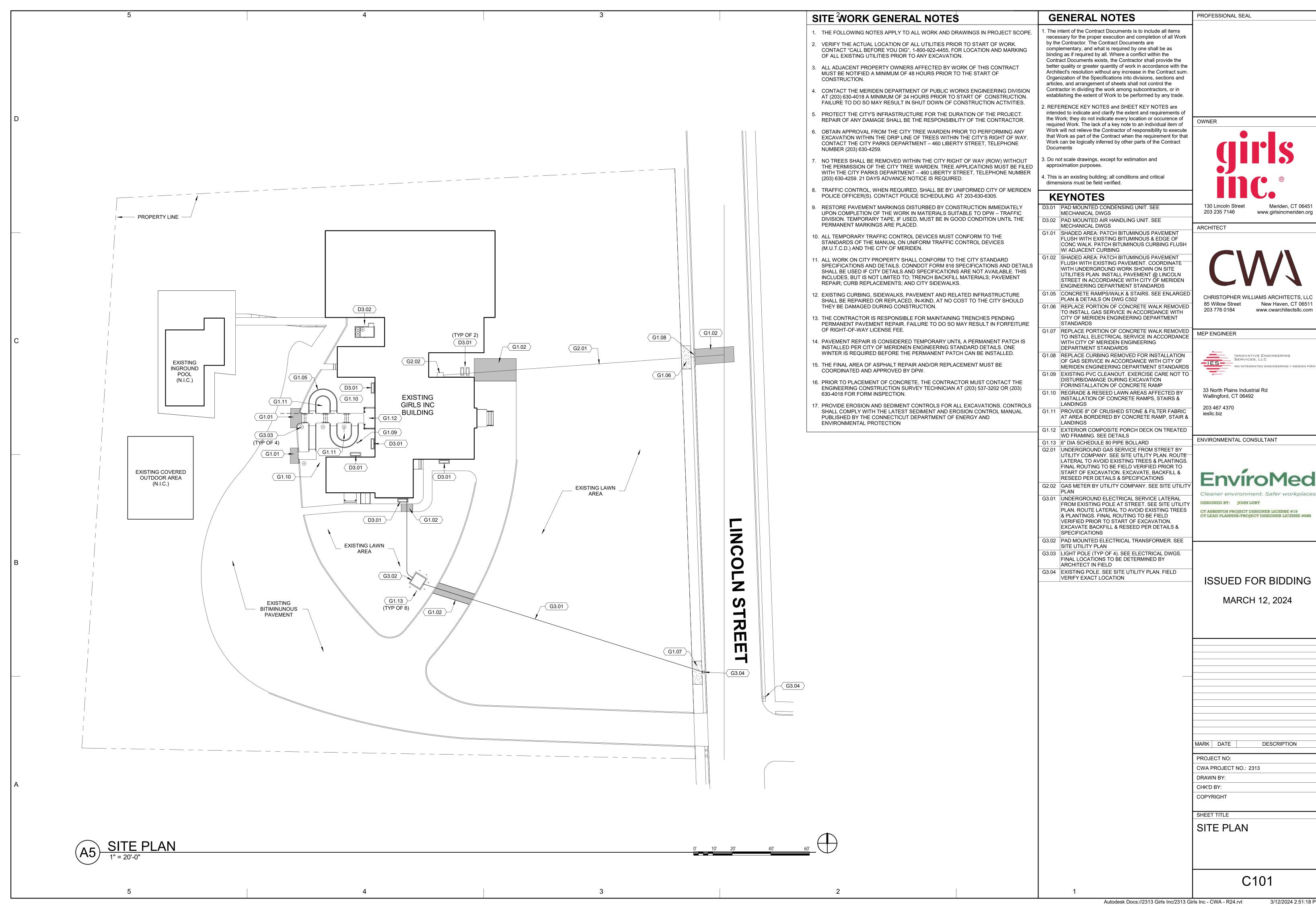
CODE INFORMATION, GENERAL NOTES, SYMBOLS & **ABBREVIATIONS** 

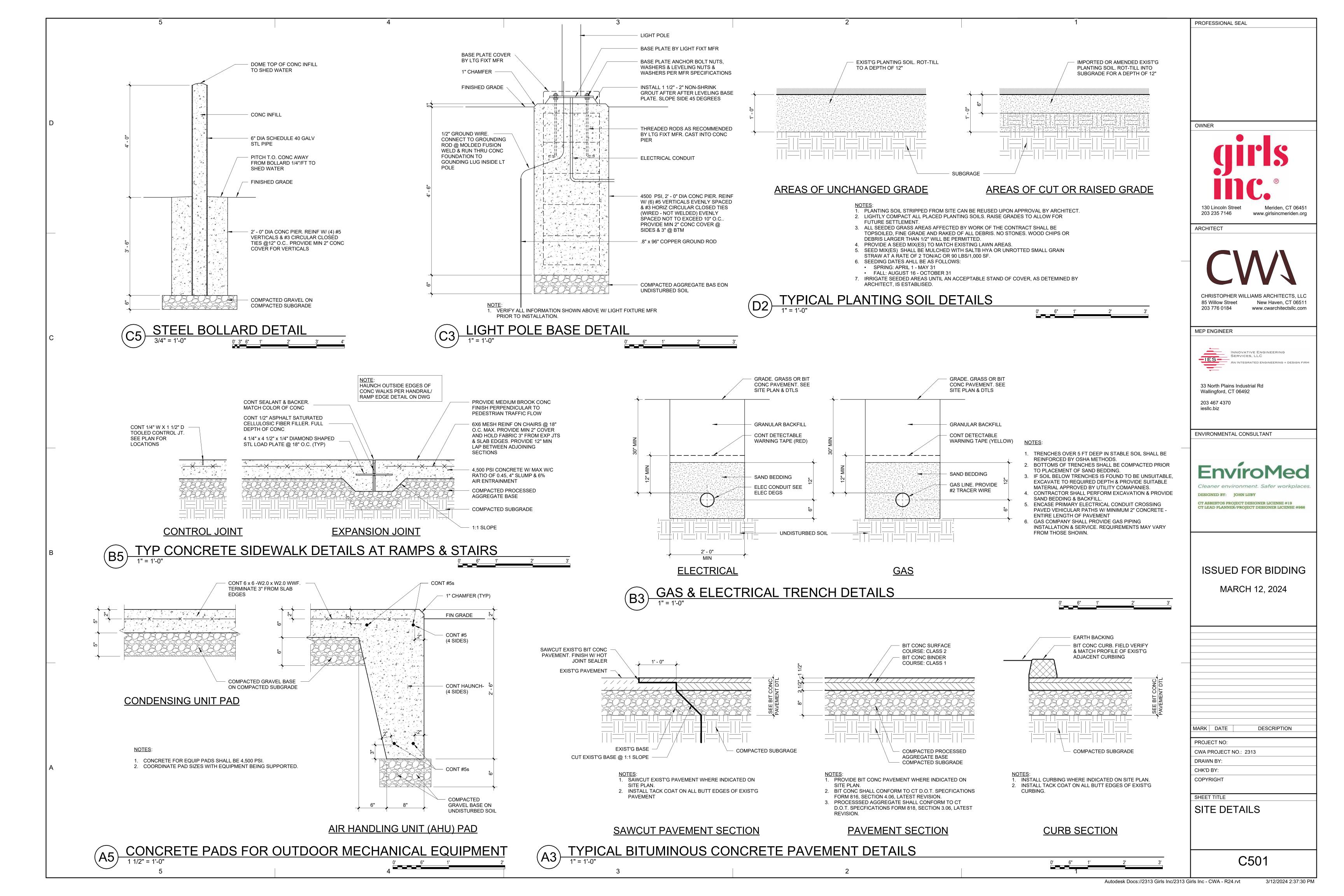
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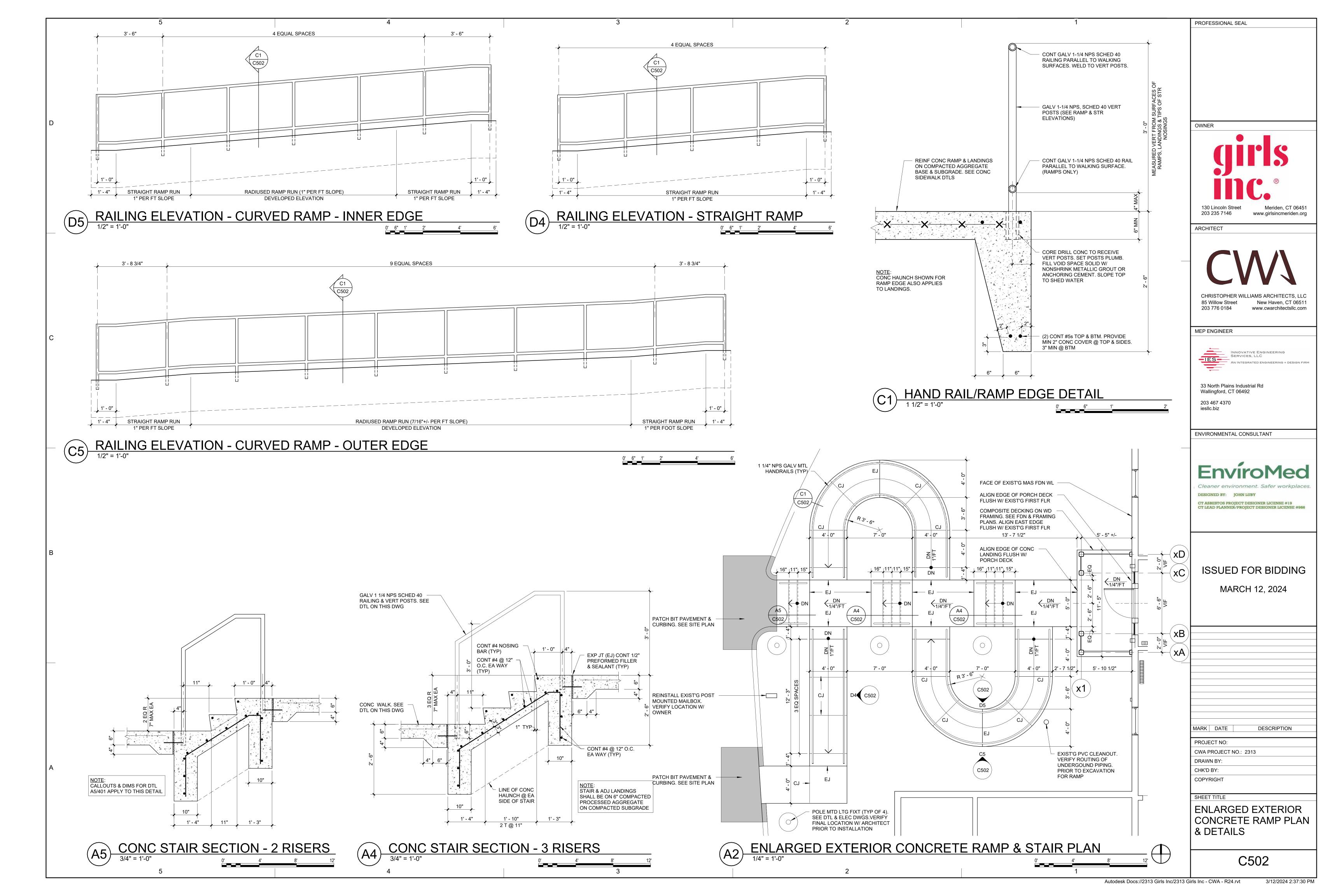
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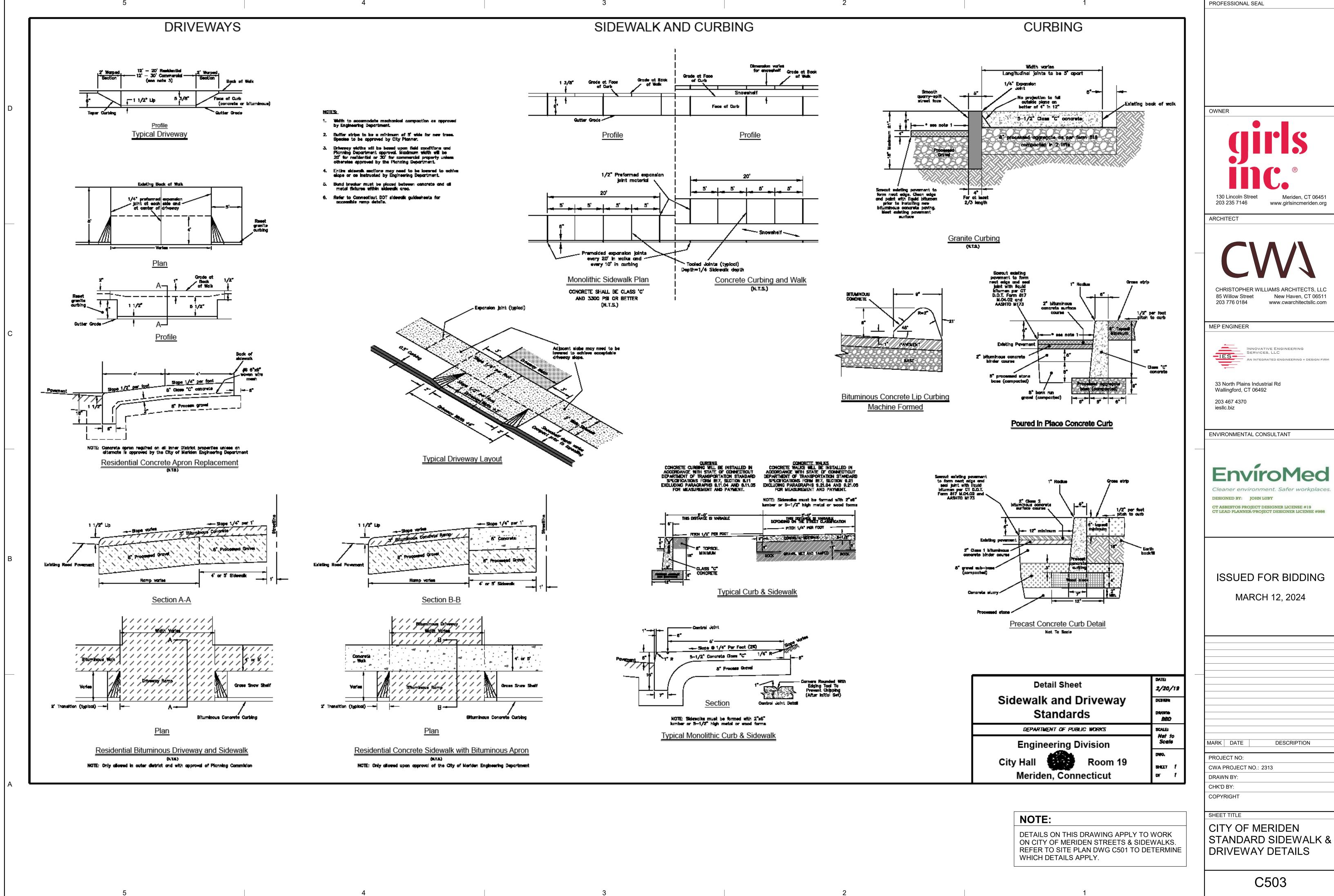
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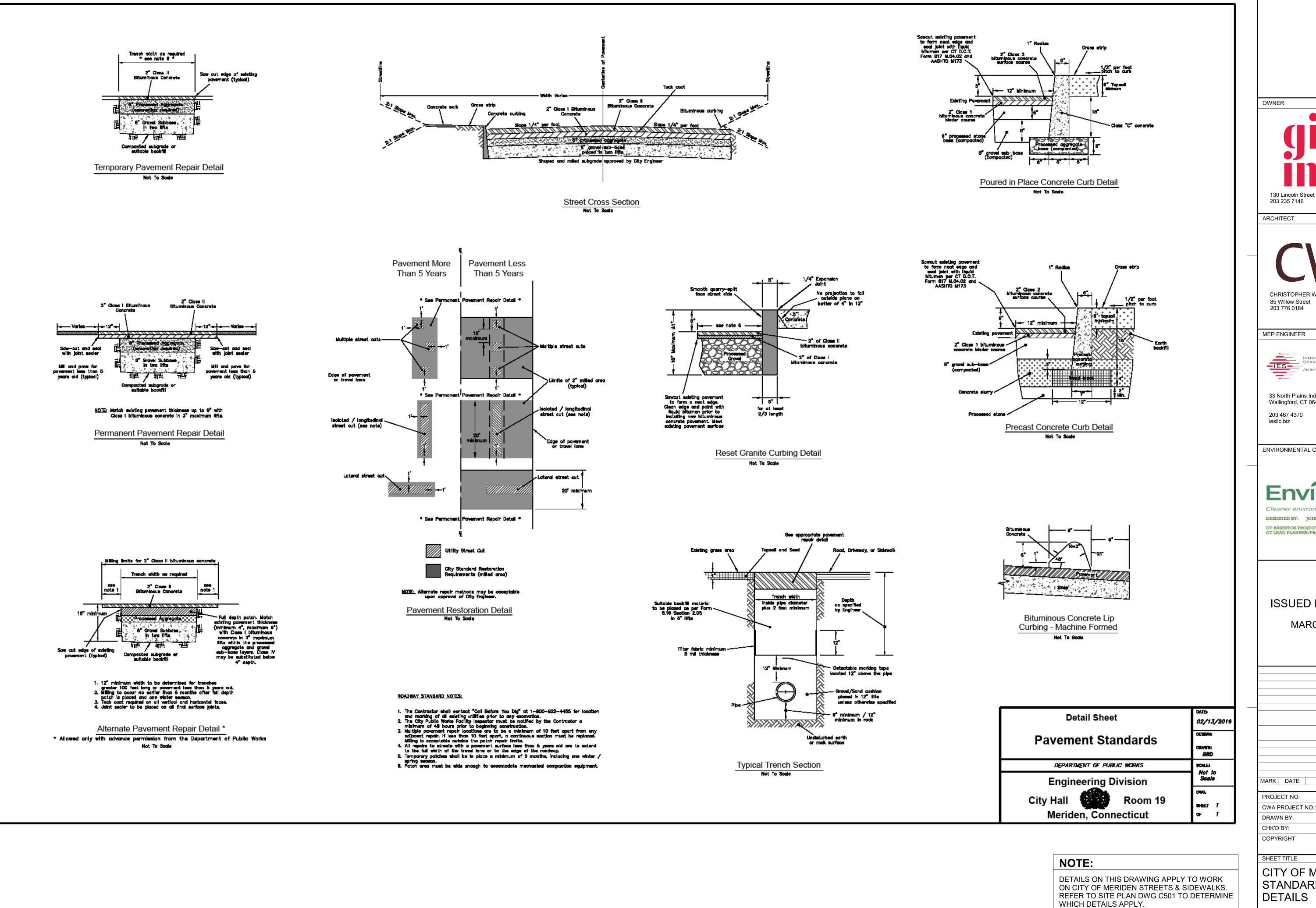






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PROFESSIONAL SEAL

Meriden, CT 06451 203 235 7146 www.girlsincmeriden.org

CHRISTOPHER WILLIAMS ARCHITECTS, LLC New Haven, CT 06511

www.cwarchitectsllc.com



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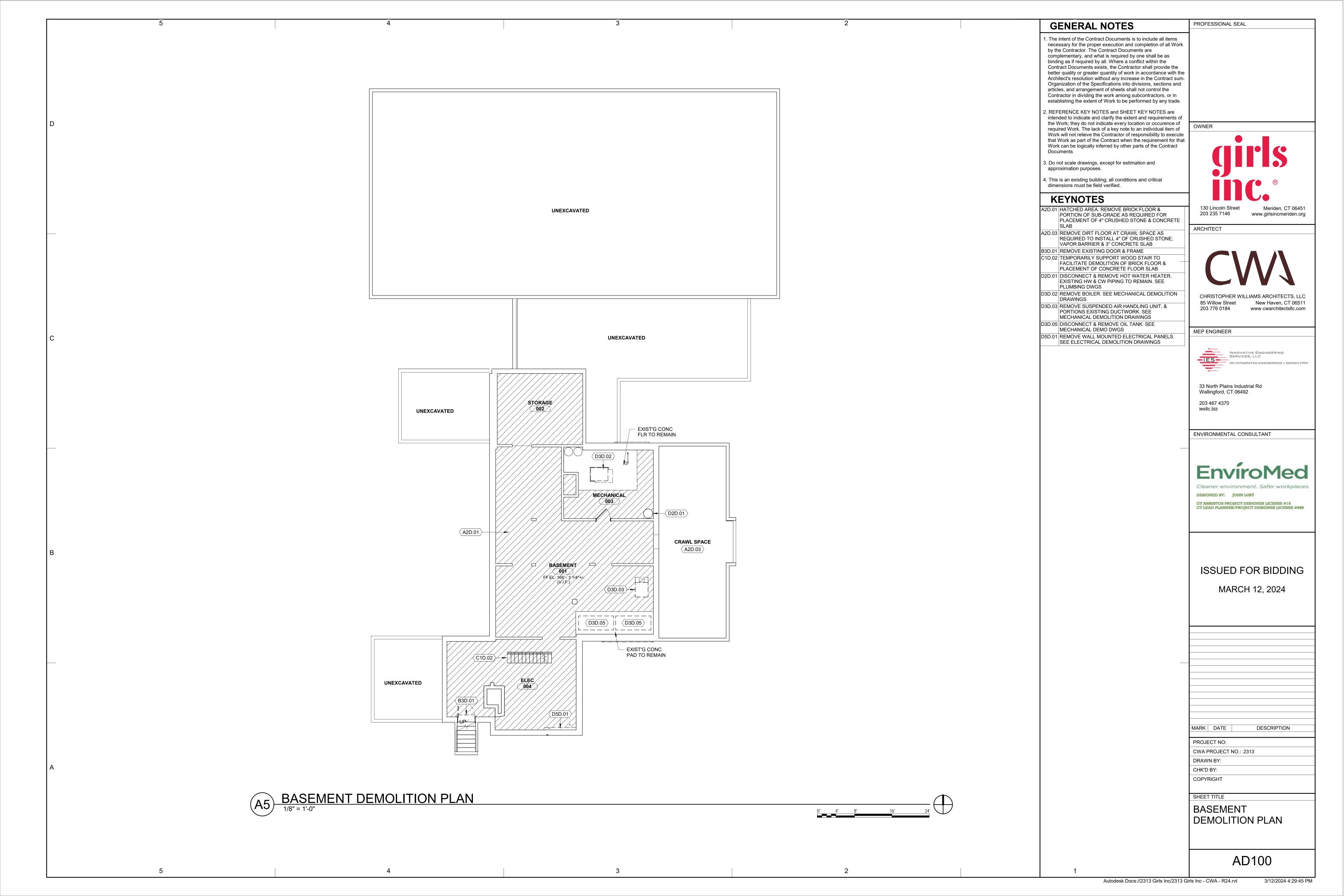
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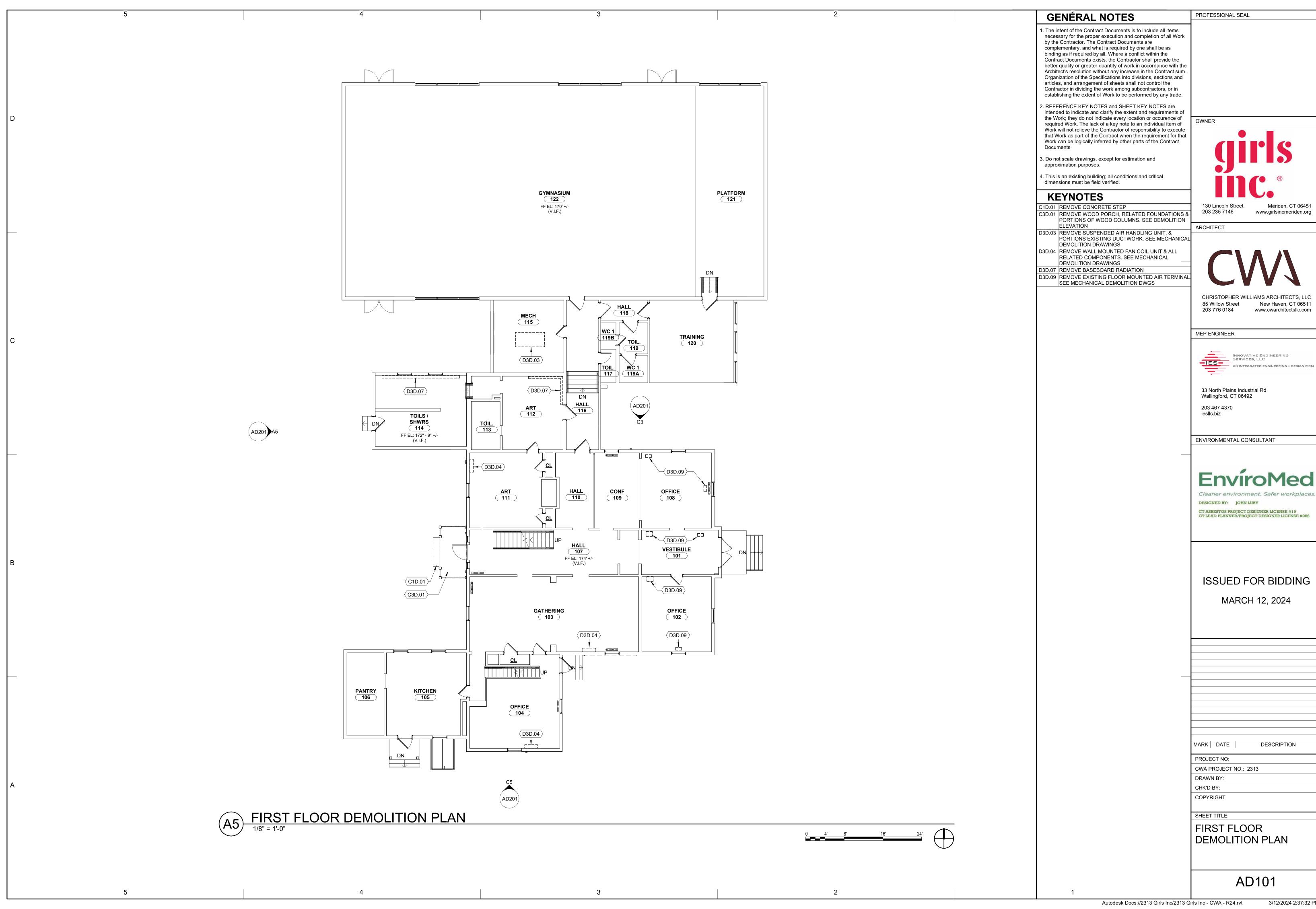
CITY OF MERIDEN STANDARD PAVEMENT DETAILS

C504

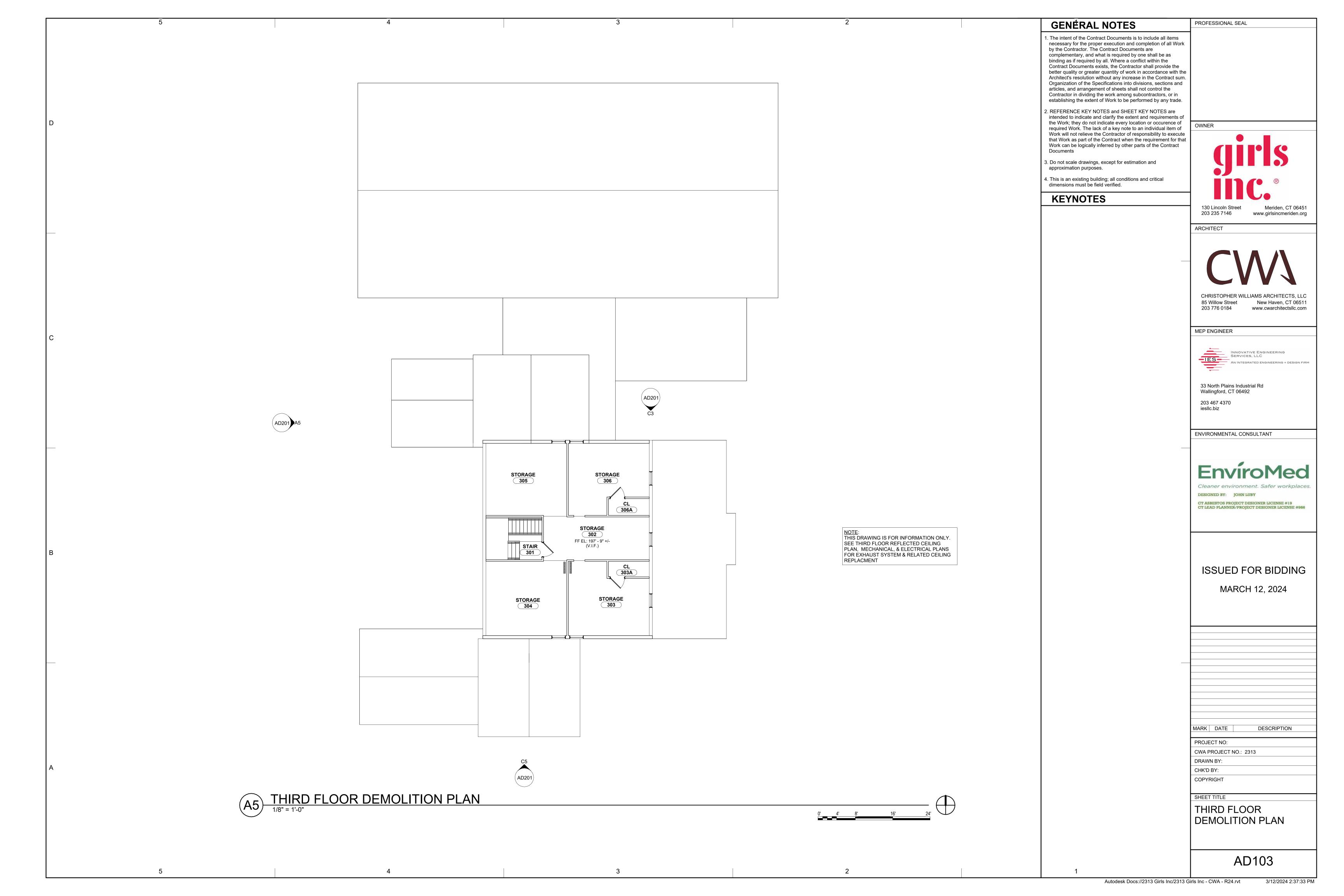
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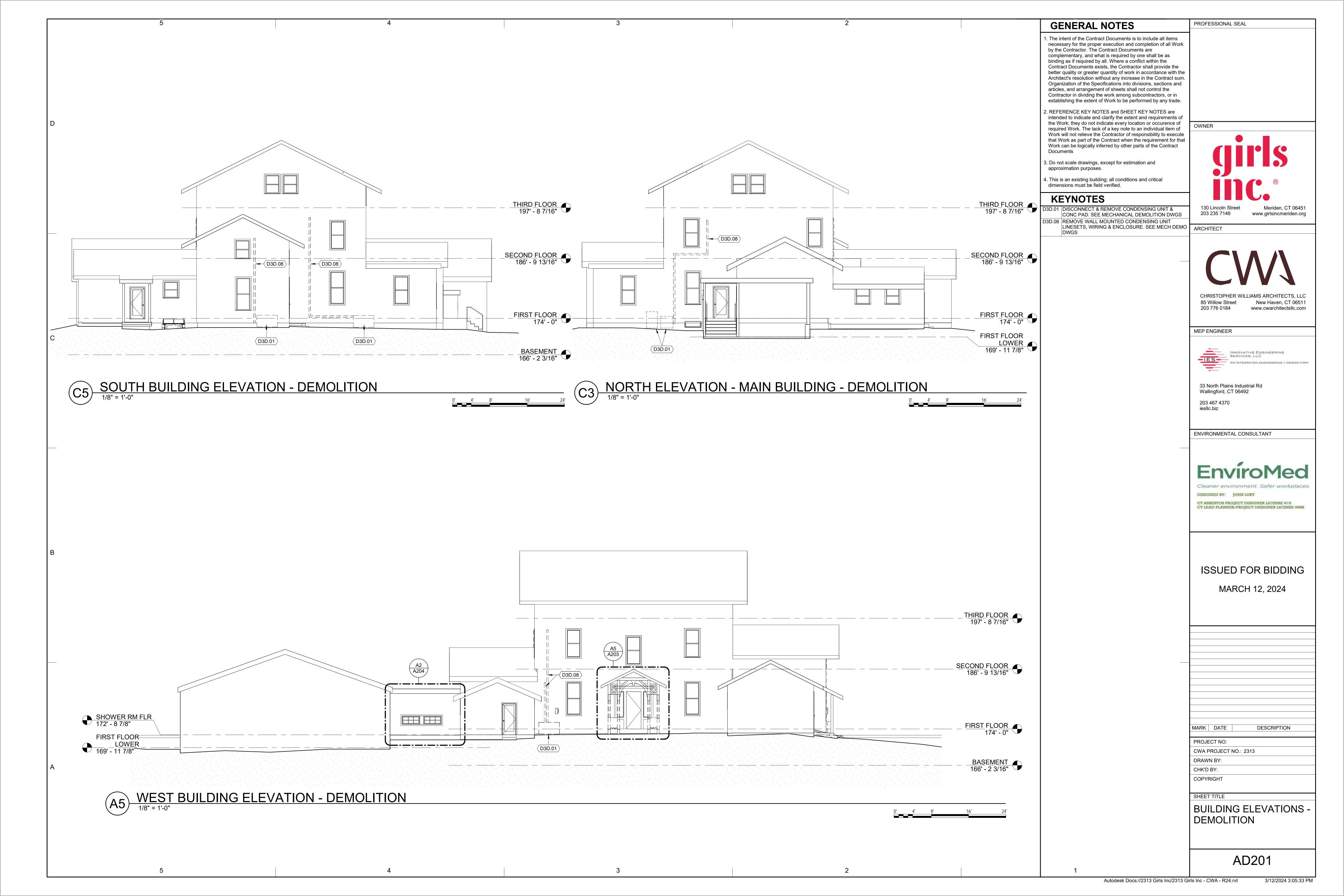
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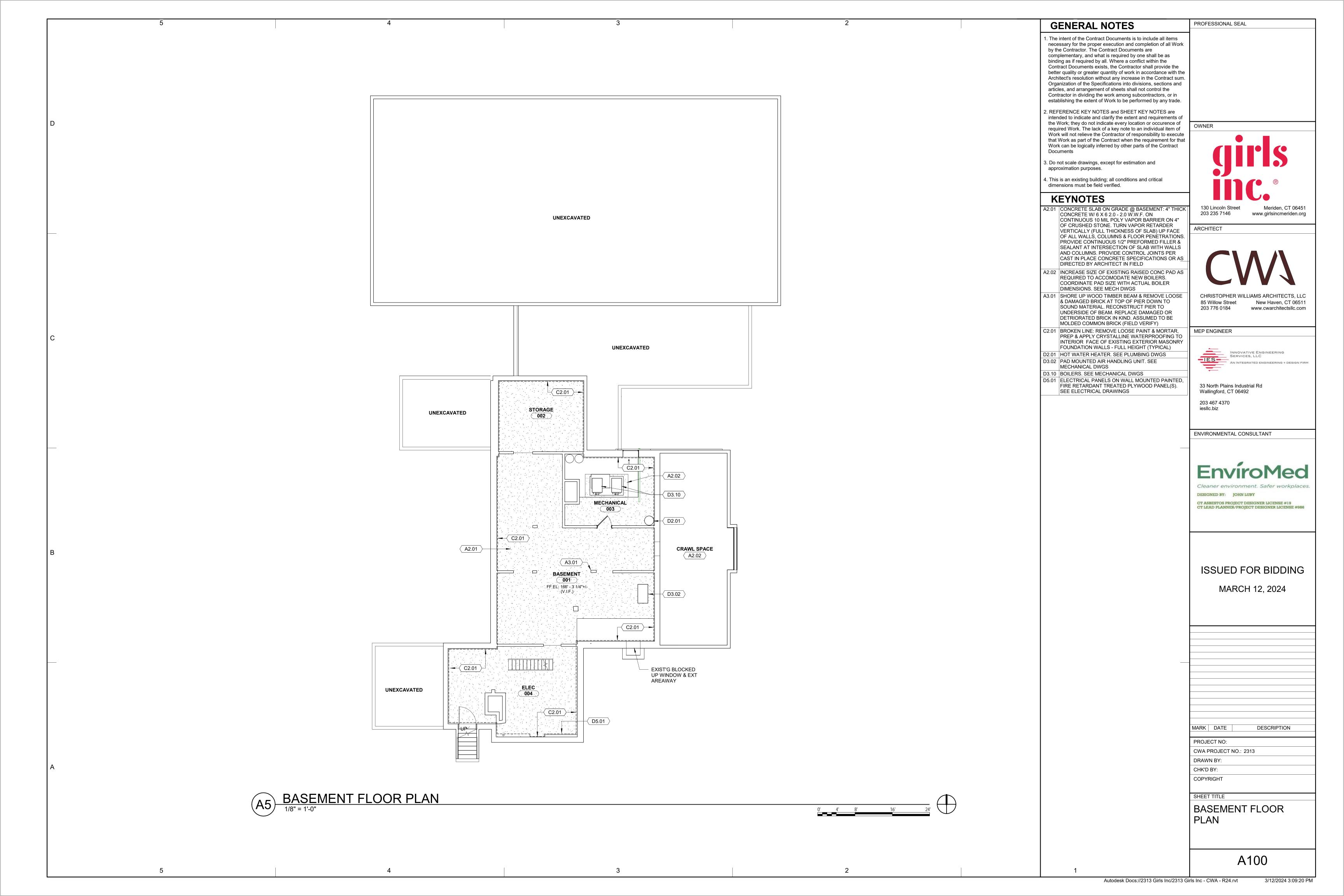


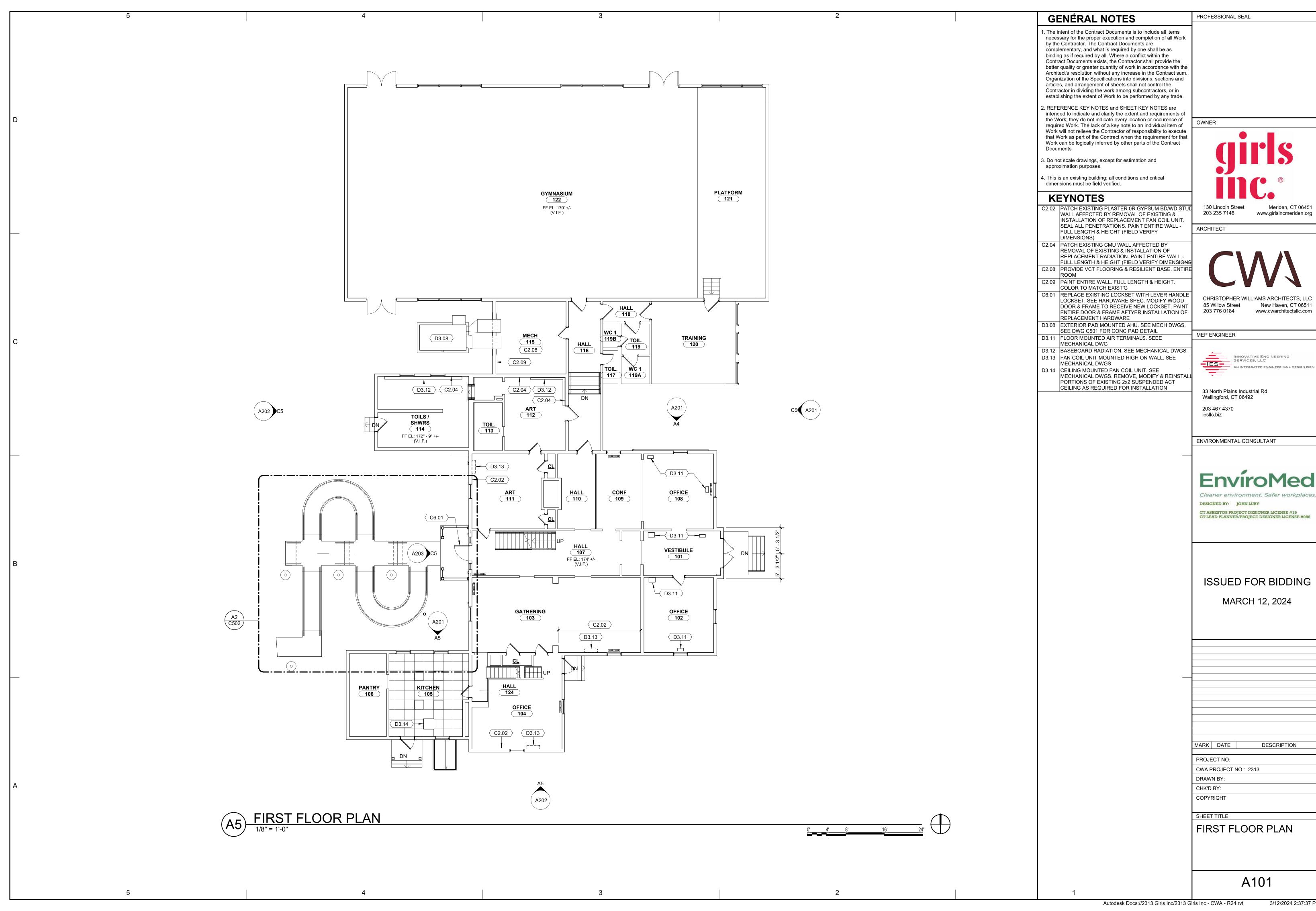




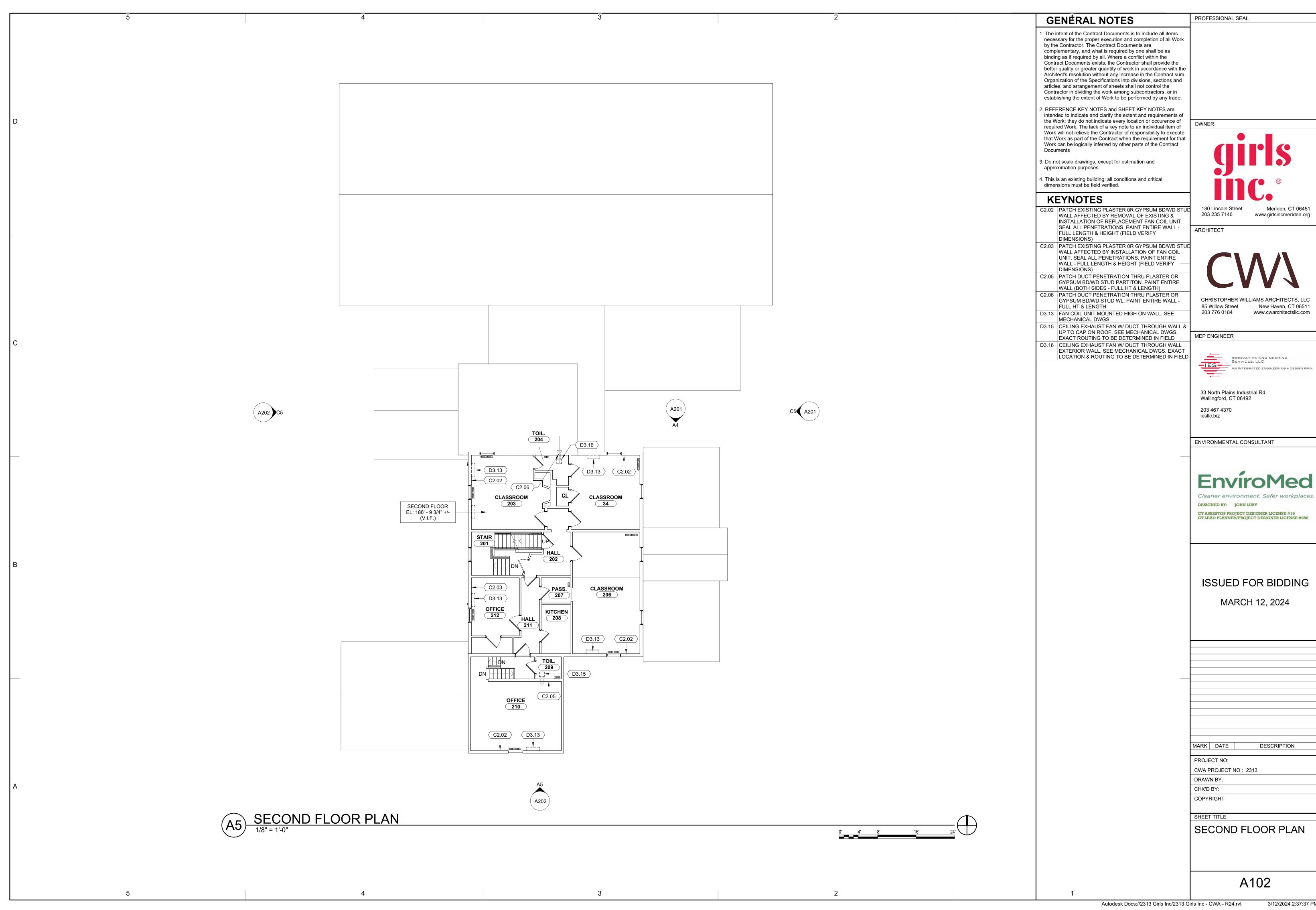




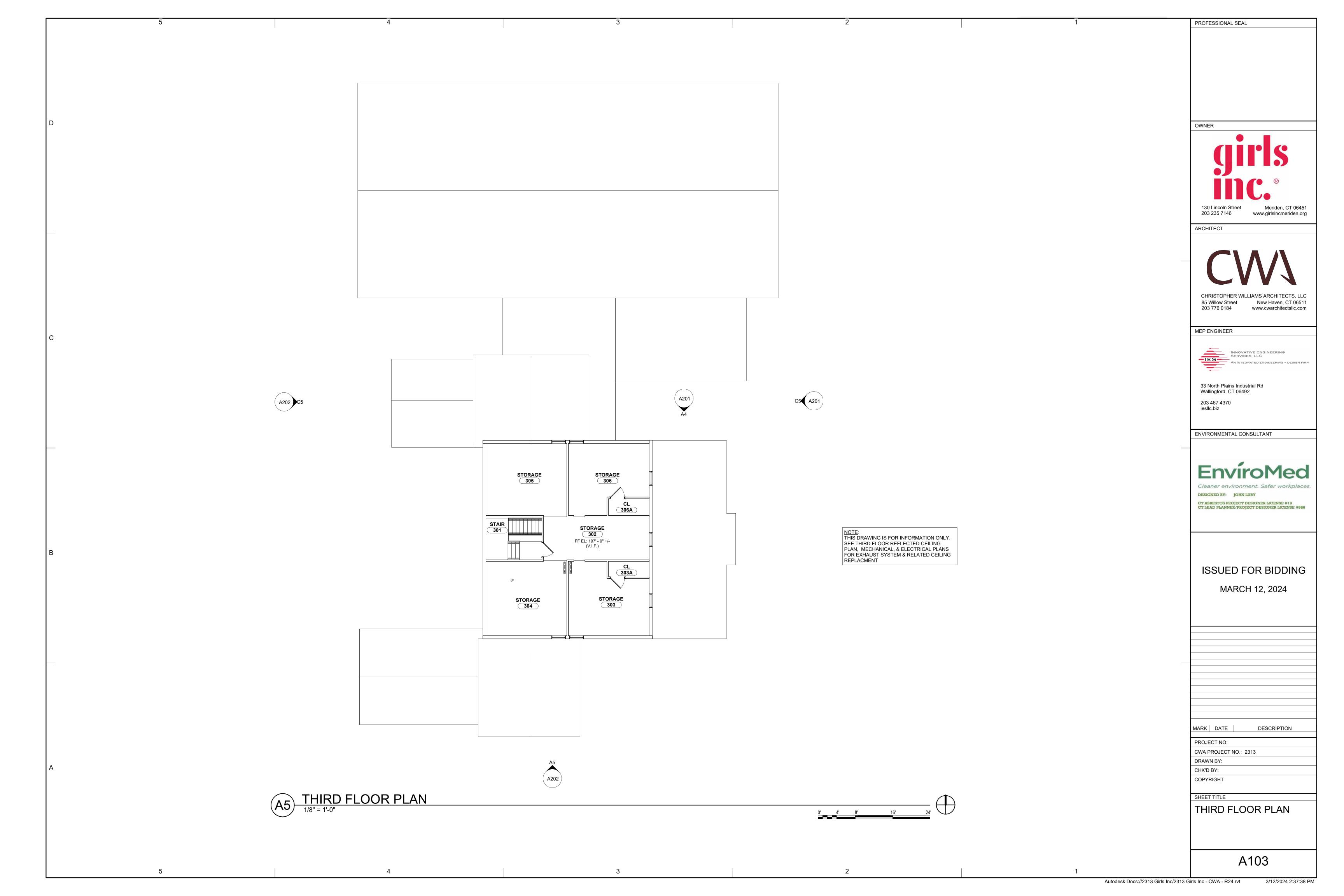


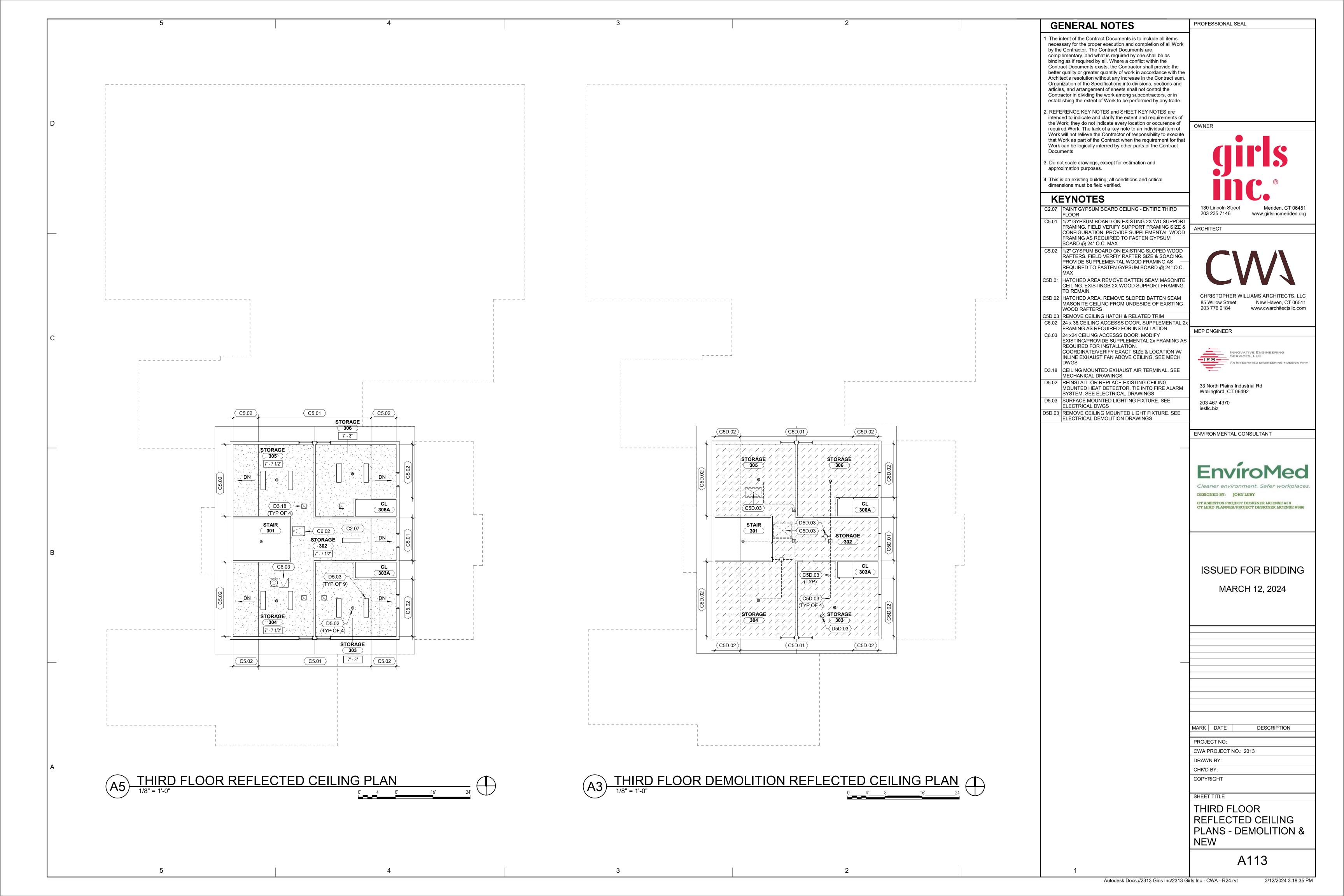


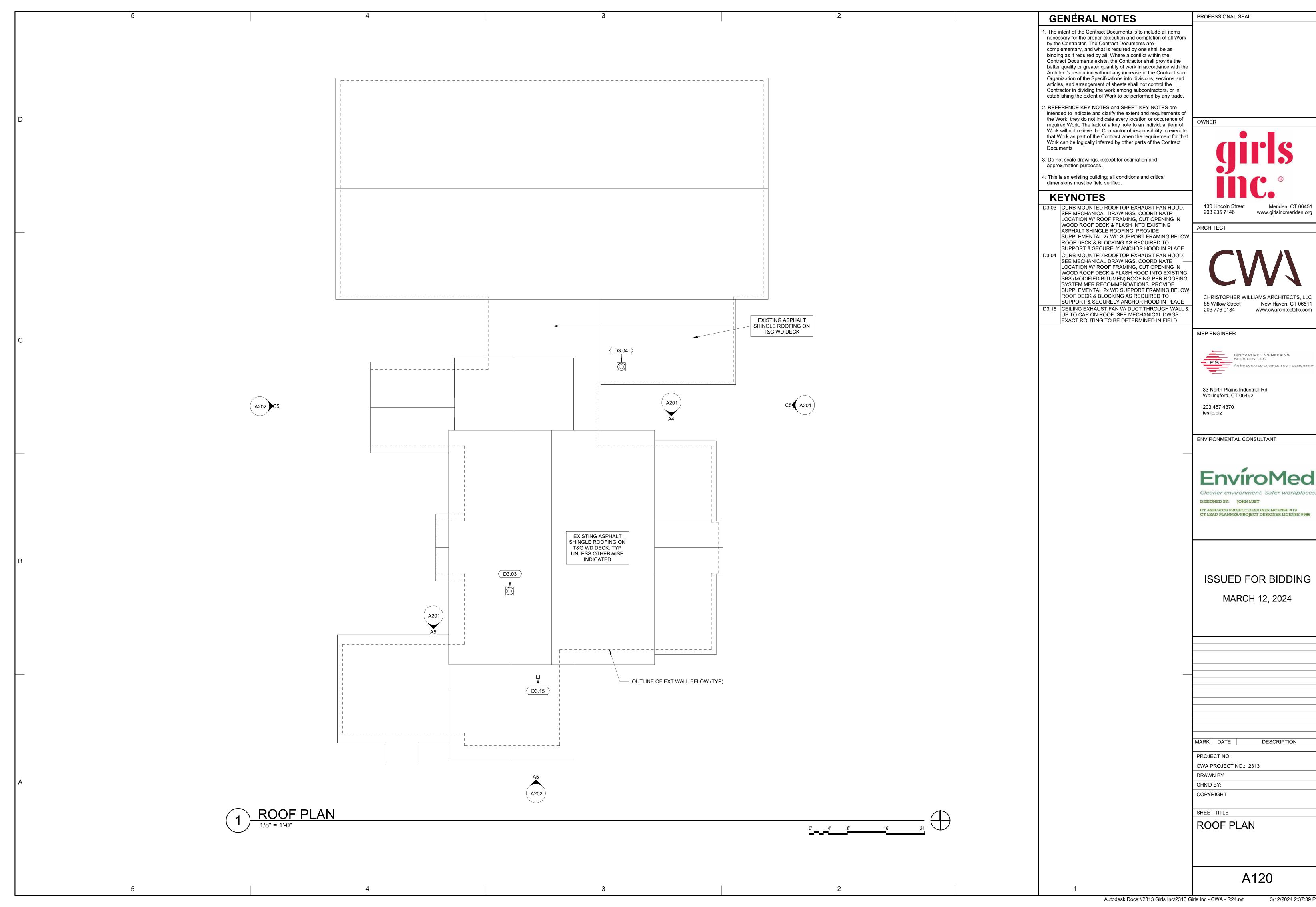
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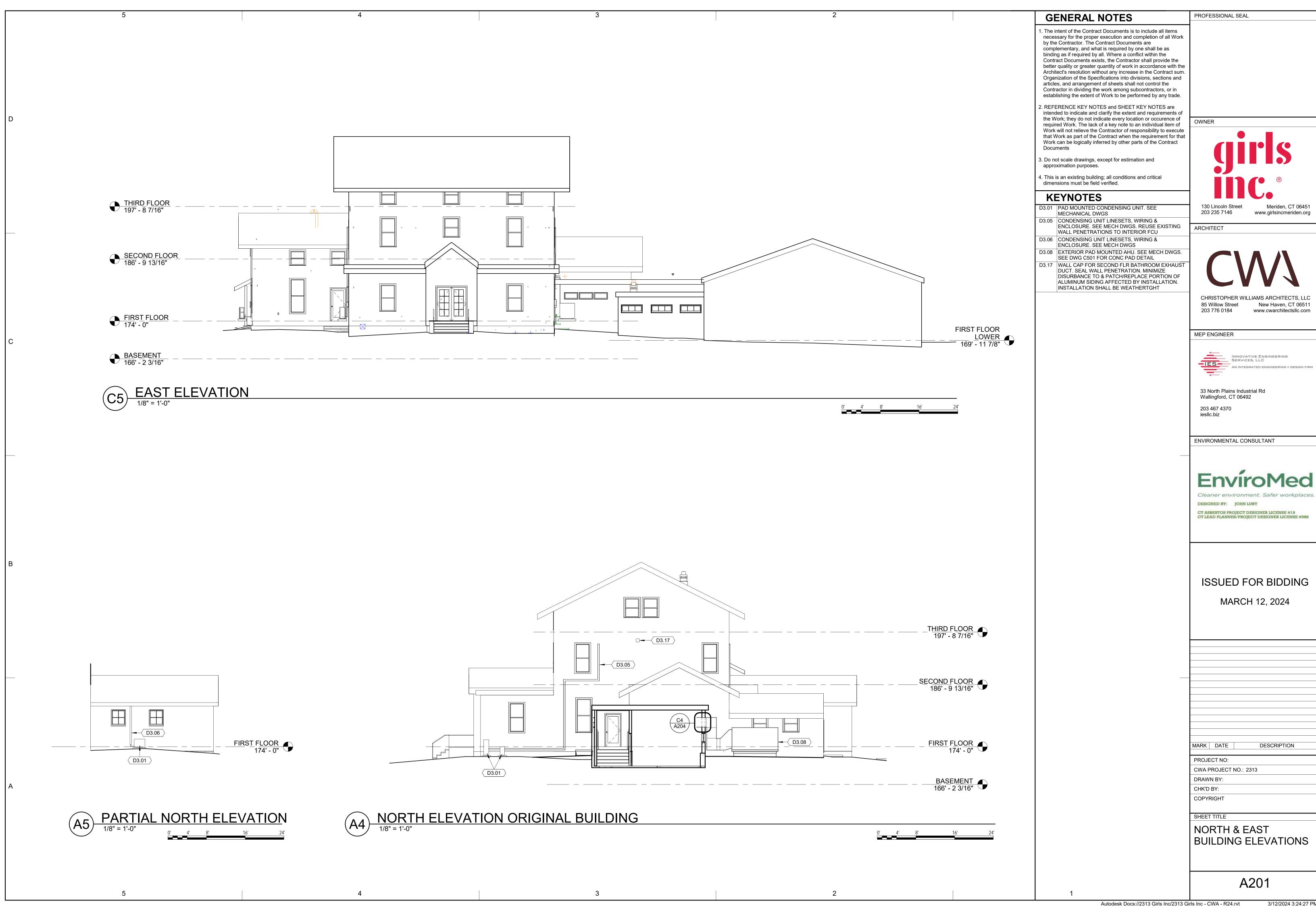


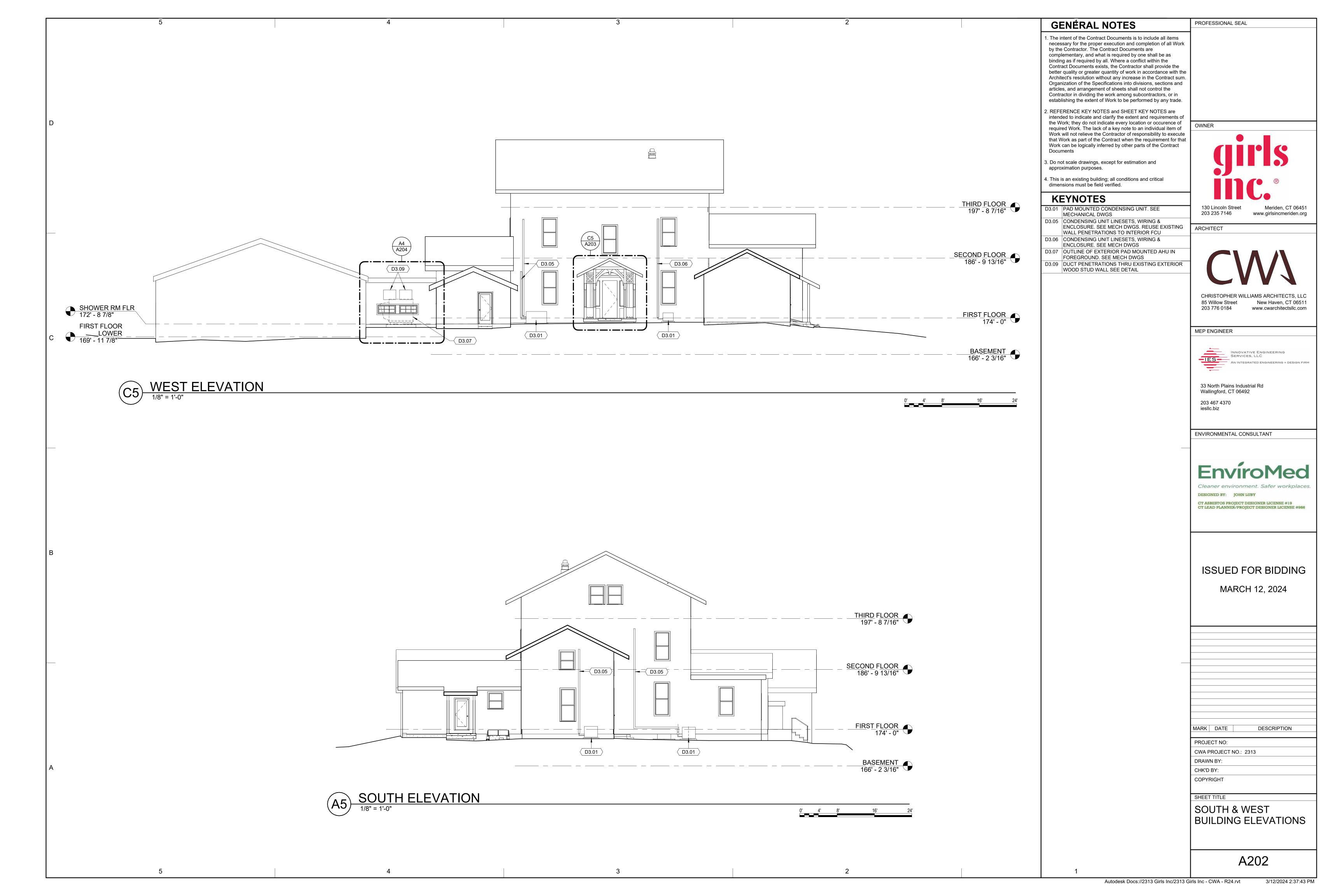
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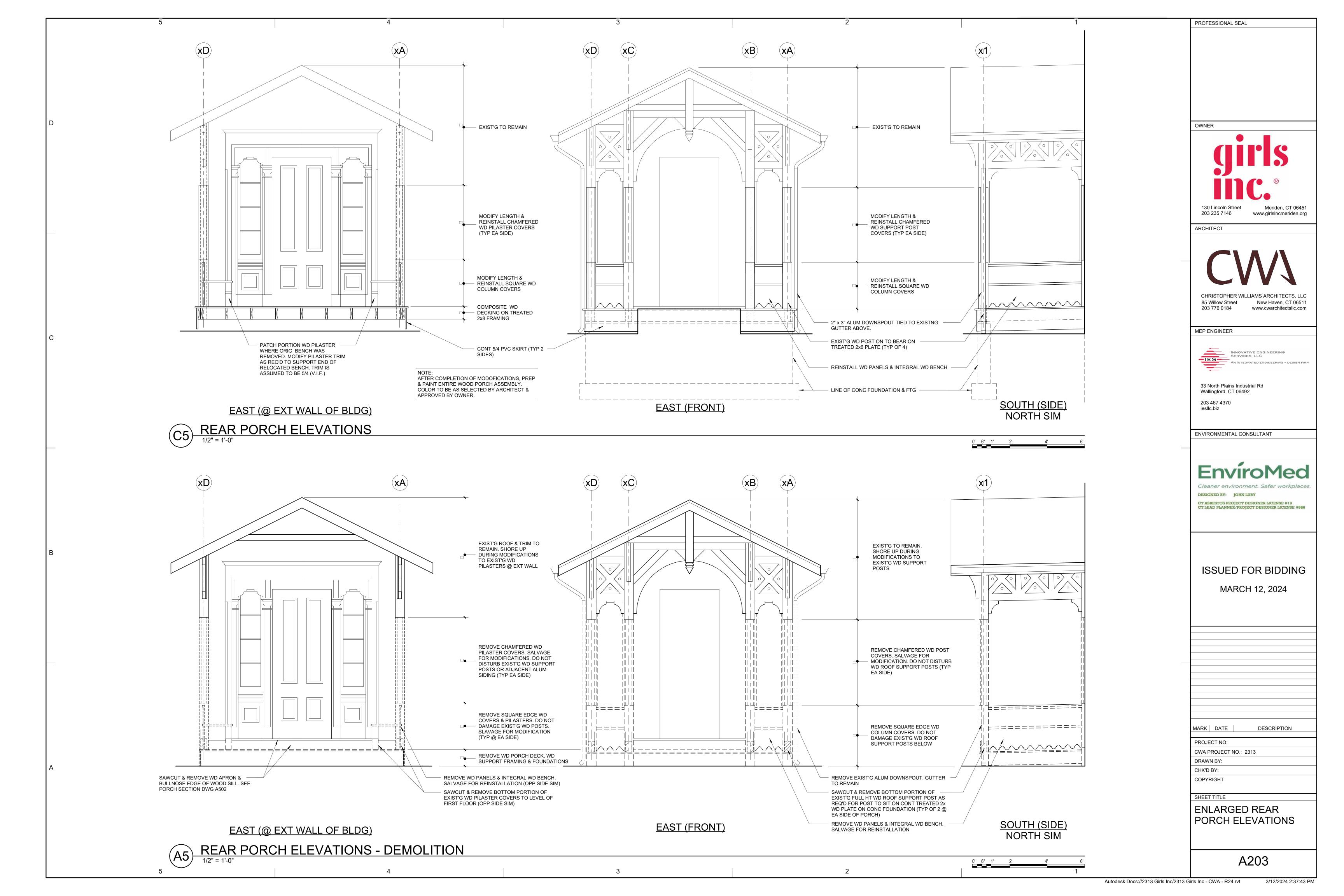


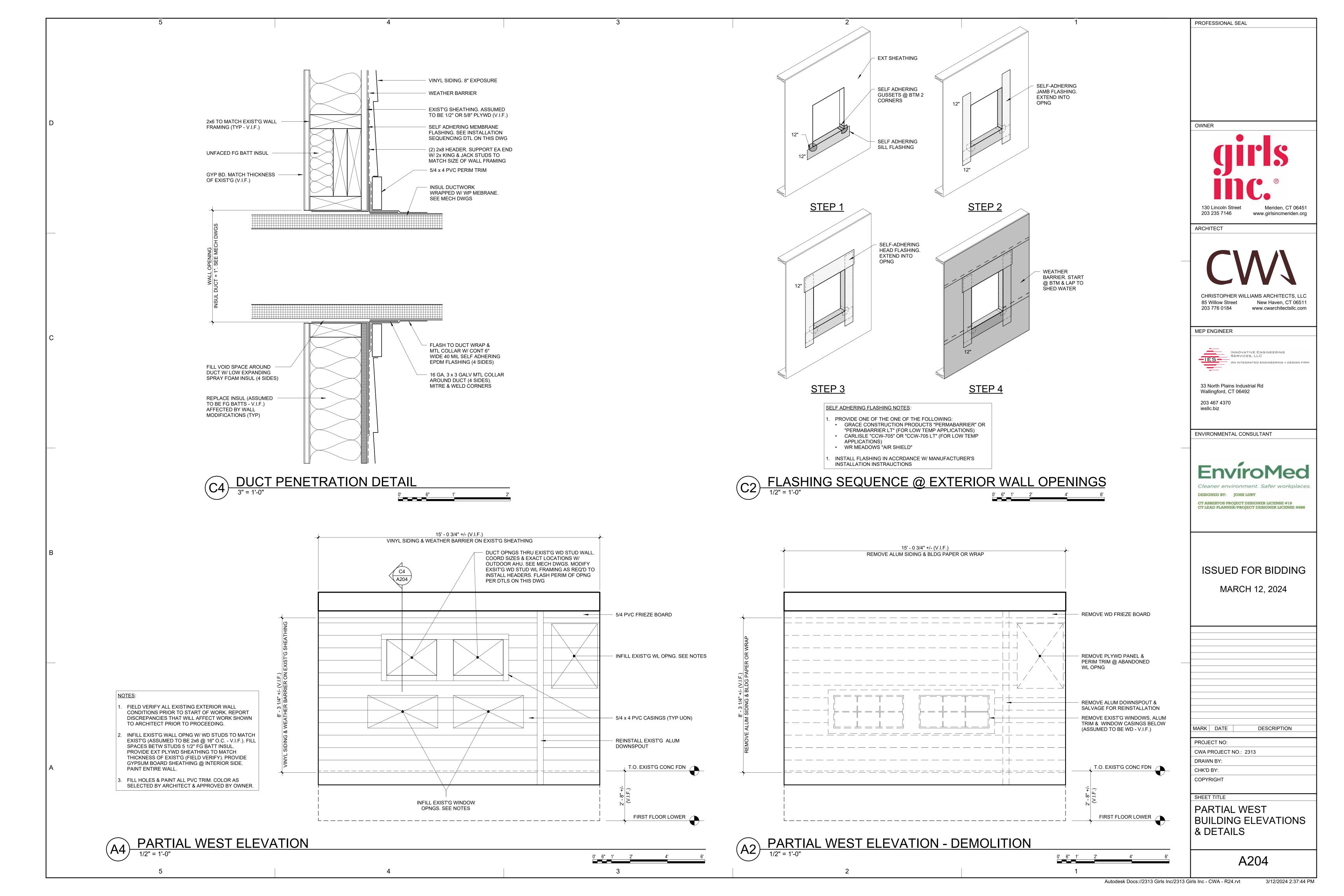


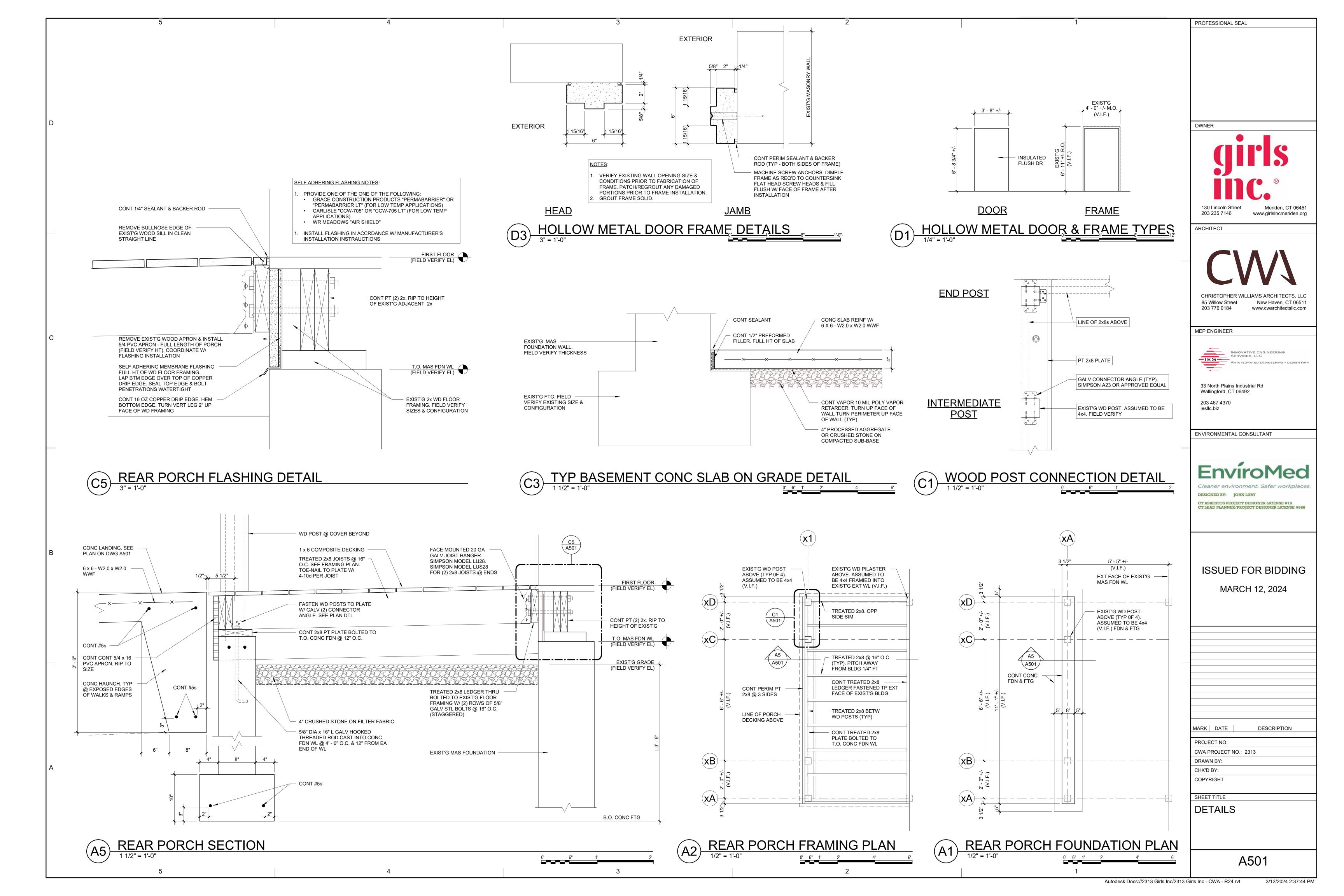


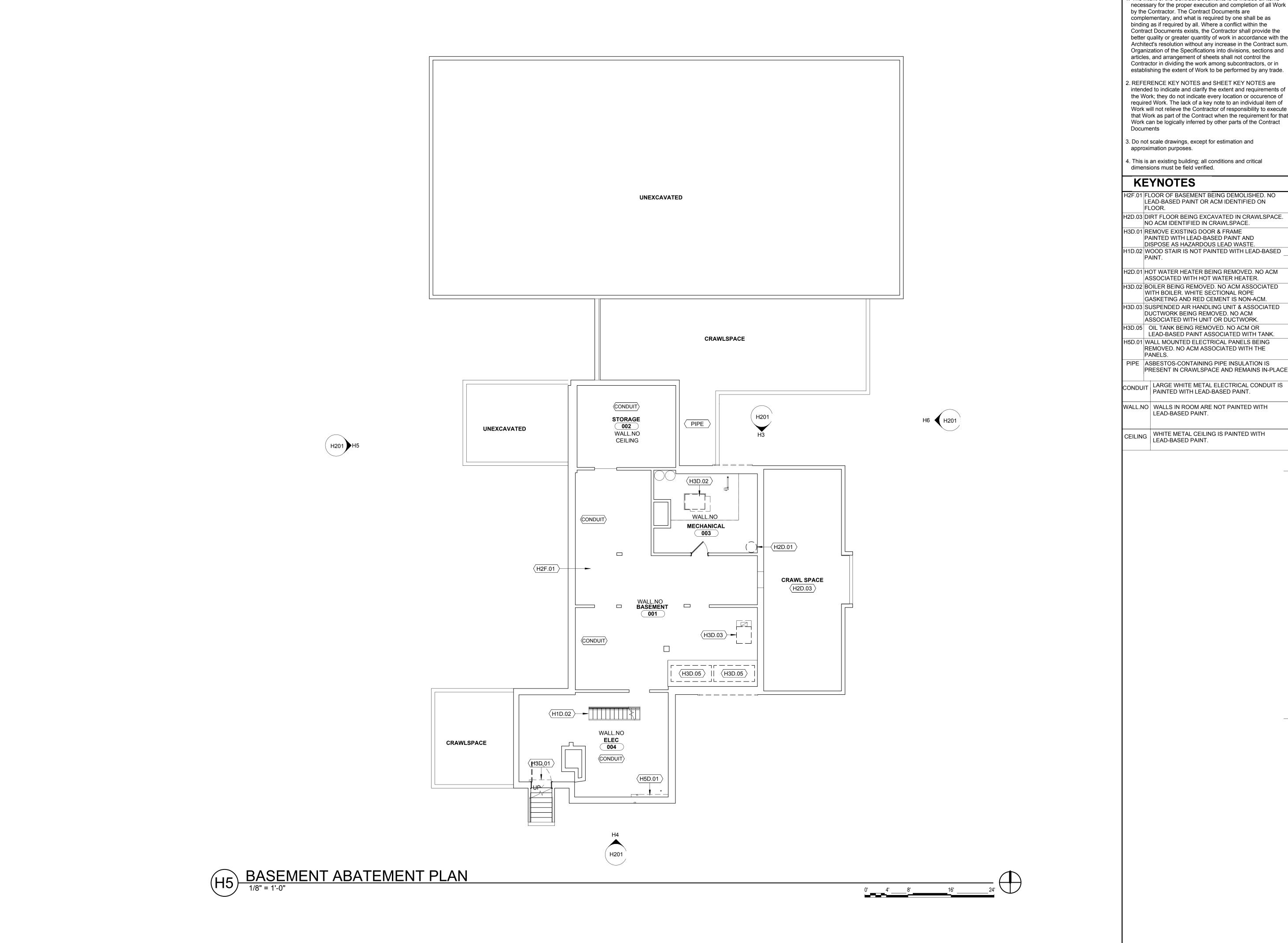












**GENERAL NOTES** 

 The intent of the Contract Documents is to include all items necessary for the proper execution and completion of all Work by the Contractor. The Contract Documents are complementary, and what is required by one shall be as binding as if required by all. Where a conflict within the Contract Documents exists, the Contractor shall provide the better quality or greater quantity of work in accordance with the Architect's resolution without any increase in the Contract sum. Organization of the Specifications into divisions, sections and articles, and arrangement of sheets shall not control the Contractor in dividing the work among subcontractors, or in establishing the extent of Work to be performed by any trade.

> 2. REFERENCE KEY NOTES and SHEET KEY NOTES are intended to indicate and clarify the extent and requirements of the Work; they do not indicate every location or occurence of required Work. The lack of a key note to an individual item of Work will not relieve the Contractor of responsibility to execute that Work as part of the Contract when the requirement for that Work can be logically inferred by other parts of the Contract

3. Do not scale drawings, except for estimation and

H2F.01 FLOOR OF BASEMENT BEING DEMOLISHED. NO LEAD-BASED PAINT OR ACM IDENTIFIED ON

NO ACM IDENTIFIED IN CRAWLSPACE.

DISPOSE AS HAZARDOUS LEAD WASTE. H1D.02 WOOD STAIR IS NOT PAINTED WITH LEAD-BASED

H2D.01 HOT WATER HEATER BEING REMOVED. NO ACM ASSOCIATED WITH HOT WATER HEATER.

GASKETING AND RED CEMENT IS NON-ACM. H3D.03 SUSPENDED AIR HANDLING UNIT & ASSOCIATED DUCTWORK BEING REMOVED. NO ACM

ASSOCIATED WITH UNIT OR DUCTWORK. H3D.05 OIL TANK BEING REMOVED. NO ACM OR

H5D.01 WALL MOUNTED ELECTRICAL PANELS BEING REMOVED. NO ACM ASSOCIATED WITH THE

PRESENT IN CRAWLSPACE AND REMAINS IN-PLACE.

WALL.NO WALLS IN ROOM ARE NOT PAINTED WITH

203 467 4370 iesllc.biz

ENVIRONMENTAL CONSULTANT

SERVICES, LLC

33 North Plains Industrial Rd

Wallingford, CT 06492

PROFESSIONAL SEAL

OWNER

130 Lincoln Street

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203 776 0184

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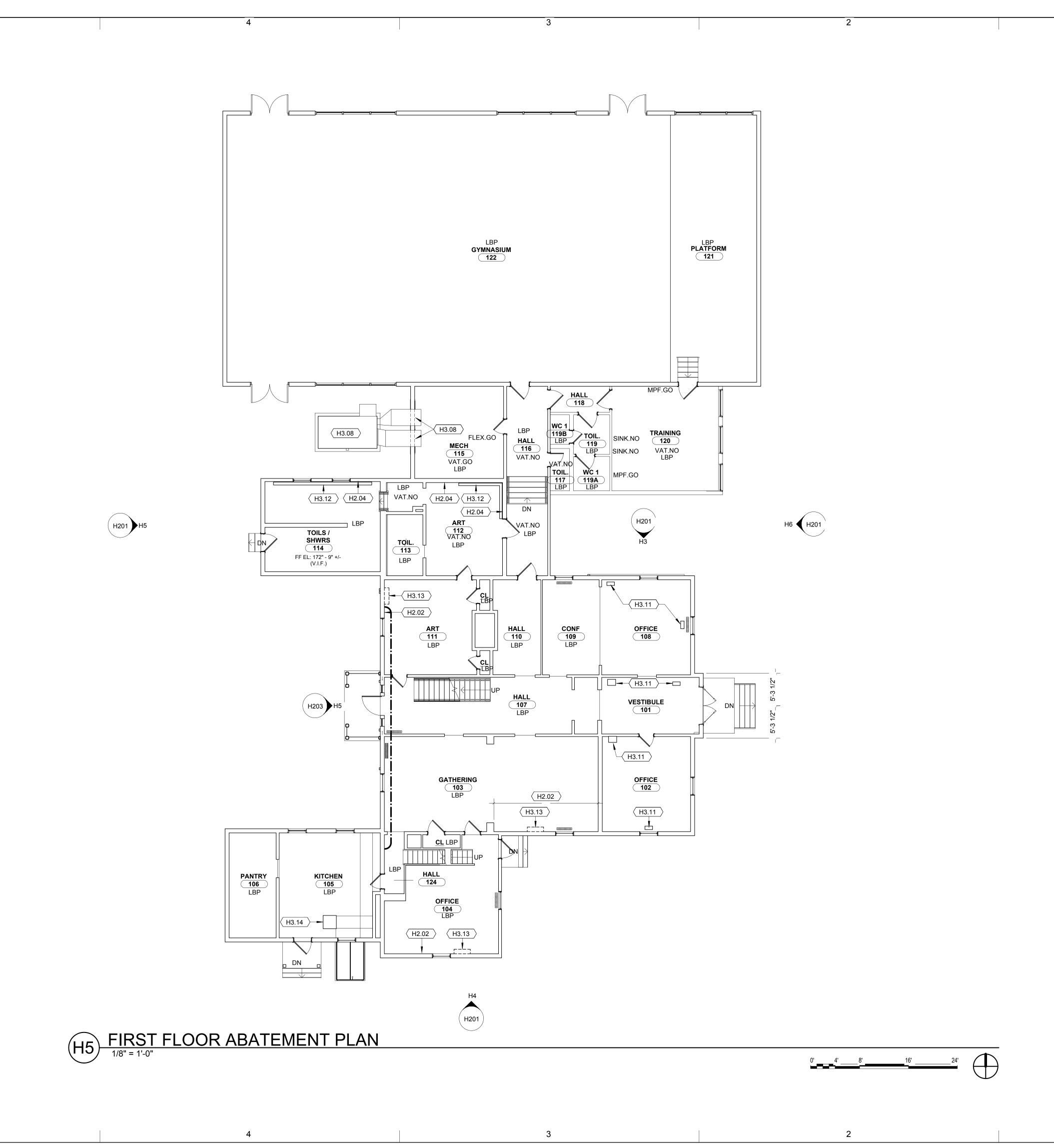
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SHEET TITLE

BASEMENT ABATEMENT PLAN

H100



GENERAL NOTES

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3. Do not scale drawings, except for estimation and approximation purposes.

 This is an existing building; all conditions and critical dimensions must be field verified.

#### **KEYNOTES**

H2.02 PLASTER OR WALLBOARD WALL FINISH IS
PAINTED WITH LEAD-BASED PAINT. EXISTING
RADIANT HEATING UNIT BEING REMOVED, NEW
UNIT BEING INSTALLED, AND ENTIRE WALL IS
BEING PAINTED. CONDUCT EXISTING HEATING
UNIT DEMO, NEW HEATING UNIT INSTALL, AND
WALL PAINT PREP IN COMPLIANCE WITH SECTION

H2.04 CMU WALL FINISH IS PAINTED WITH LEAD-BASED PAINT. EXISTING RADIANT HEATING UNIT BEING REMOVED, NEW UNIT BEING INSTALLED, AND ENTIRE WALL IS BEING PAINTED. CONDUCT EXISTING HEATING UNIT DEMO, NEW HEATING UNIT INSTALL, AND WALL PAINT PREP IN COMPLIANCE WITH SECTION 028233.

H3.08

NEW PAD-MOUNTED HVAC UNIT BEING INSTALLED AT THIS LOCATION. CUTTING THROUGH EXTERIOR WALL, PAINTED WITH LEAD-BASED PAINT, IS REQUIRED TO INSTALL NEW DUCTWORK. CONDUCT CUTTING IN COMPLIANCE WITH SECTION 028233.

H3.11 NEW FLOOR-MOUNTED AIR TERMINAL BEING INSTALLED IN EXISTING FLOOR OPENING AT THIS LOCATION. NO ASBESTOS OR LEAD-BASED PAINT IMPACT ANTICIPATED.

H3.12 BASEBOARD RADIATOR REMAINS IN-PLACE. NO ASBESTOS OR LEAD-BASED PAINT IMPACT ANTICIPATED.

H3.13 FAN COIL UNIT REMAINS IN-PLACE. NO ASBESTOS OR LEAD-BASED PAINT IMPACT ANTICIPATED.

H3.14 NEW CEILING-MOUNTED FAN COIL UNIT BEING INSTALLED AT THIS LOCATION IMPACTING CEILING PAINTED WITH LEAD-BASED PAINT, CONDUCT DRILLING IN COMPLIANCE WITH SECTION 028233.

VAT.GO

VINYL ASBESTOS FLOOR TILE & MASTIC PRESENT IN ROOM. REMOVE AND DISPOSE OF VAT & MASTIC USING NEGATIVE PRESSURE

CONTAINMENT. REMOVE MASTIC USING WET MECHANICAL METHODS.

VAT.NO VINYL ASBESTOS FLOOR TILE & MASTIC PRESENT IN ROOM UNDER CARPET. LEAVE VAT IN-PLACE.

ASBESTOS-CONTAINING MUDDED PIPE FITTING INSULATION (1 FITTING) PRESENT ON DOMESTIC WATER LINE. REMOVE PIPE FITTING INSULATION AND 6" OF FIBERGLASS PIPE INSULATION TO EITHER SIDE USING THE GLOVEBAG REMOVAL

ASBESTOS-CONTAINING FLEXIBLE DUCT CONNECTORS (2) PRESENT ON HVAC UNIT. REMOVE AND DISPOSE OF THE FLEXIBLE DUCT CONNECTORS USING A NEGATIVE PRESSURE CONTAINMENT.

SINK.NO SINK HAS ASBESTOS-CONTAINING UNDERCOATING. LEAVE SINK IN-PLACE.

TECHNIQUE.

LBP CEILING, WALLS, AND WOODWORK IN ROOM ARE PAINTED WITH LEAD-BASED PAINT (EXCEPT WHERE SPECIFICALLY NOTED). CONDUCT CEILING, WALL, AND WOODWORK DRILLING AND CUTTING REQUIRED IN SUPPORT OF ELECTRICAL & MECHANICAL DRAWINGS IN COMPLIANCE WITH SECTION 028233.

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203 235 7146 www.girlsincmeriden.org

ARCHITECT

CV/

CHRISTOPHER WILLIAMS ARCHITECTS, LLC 85 Willow Street New Haven, CT 06511 203 776 0184 www.cwarchitectsllc.com

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33 North Plains Industrial Rd Wallingford, CT 06492

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DESIGNED BY: JOHN LUBY

CT ASBESTOS PROJECT DESIGNER LICENSE #19 CT LEAD PLANNER/PROJECT DESIGNER LICENSE #986

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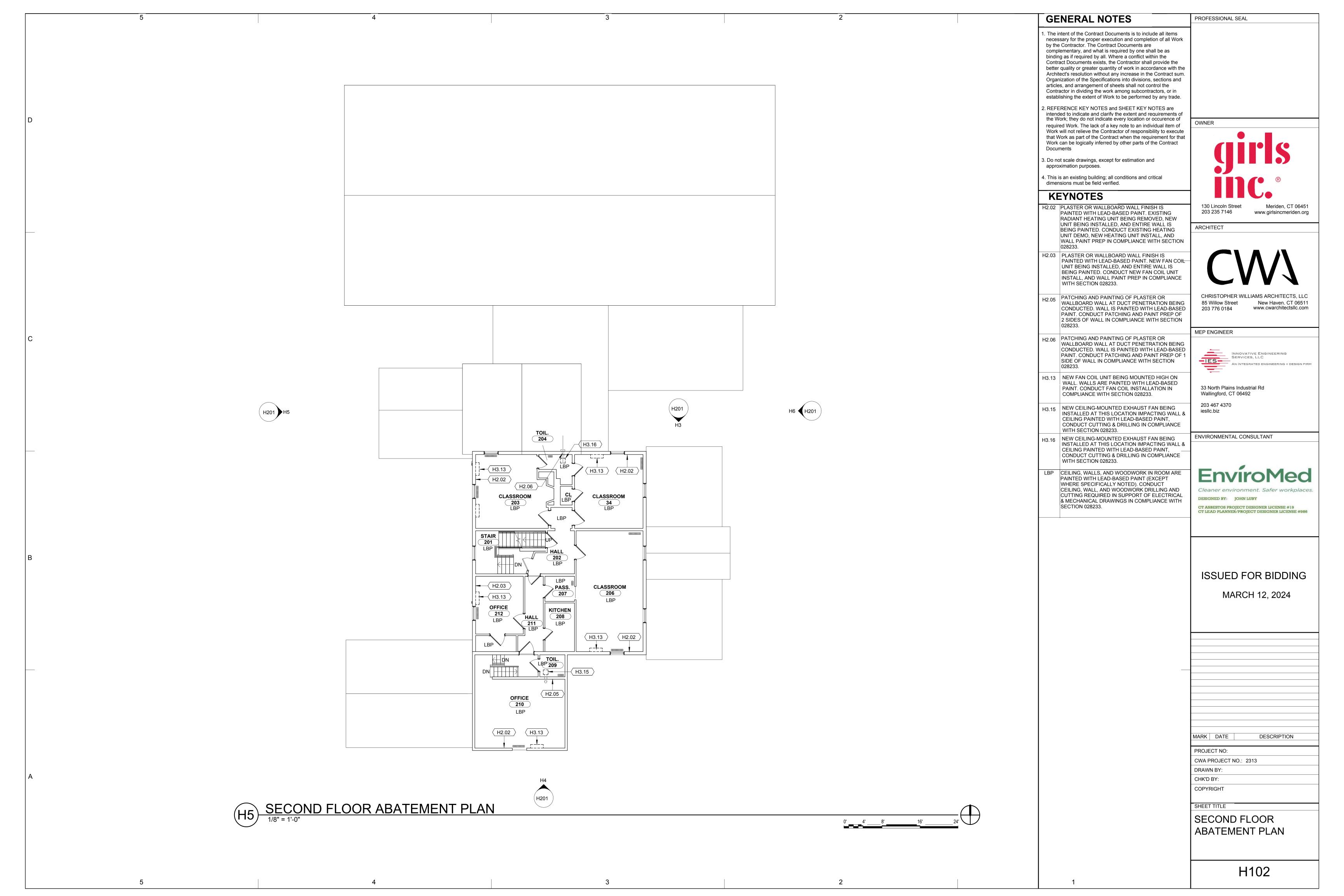
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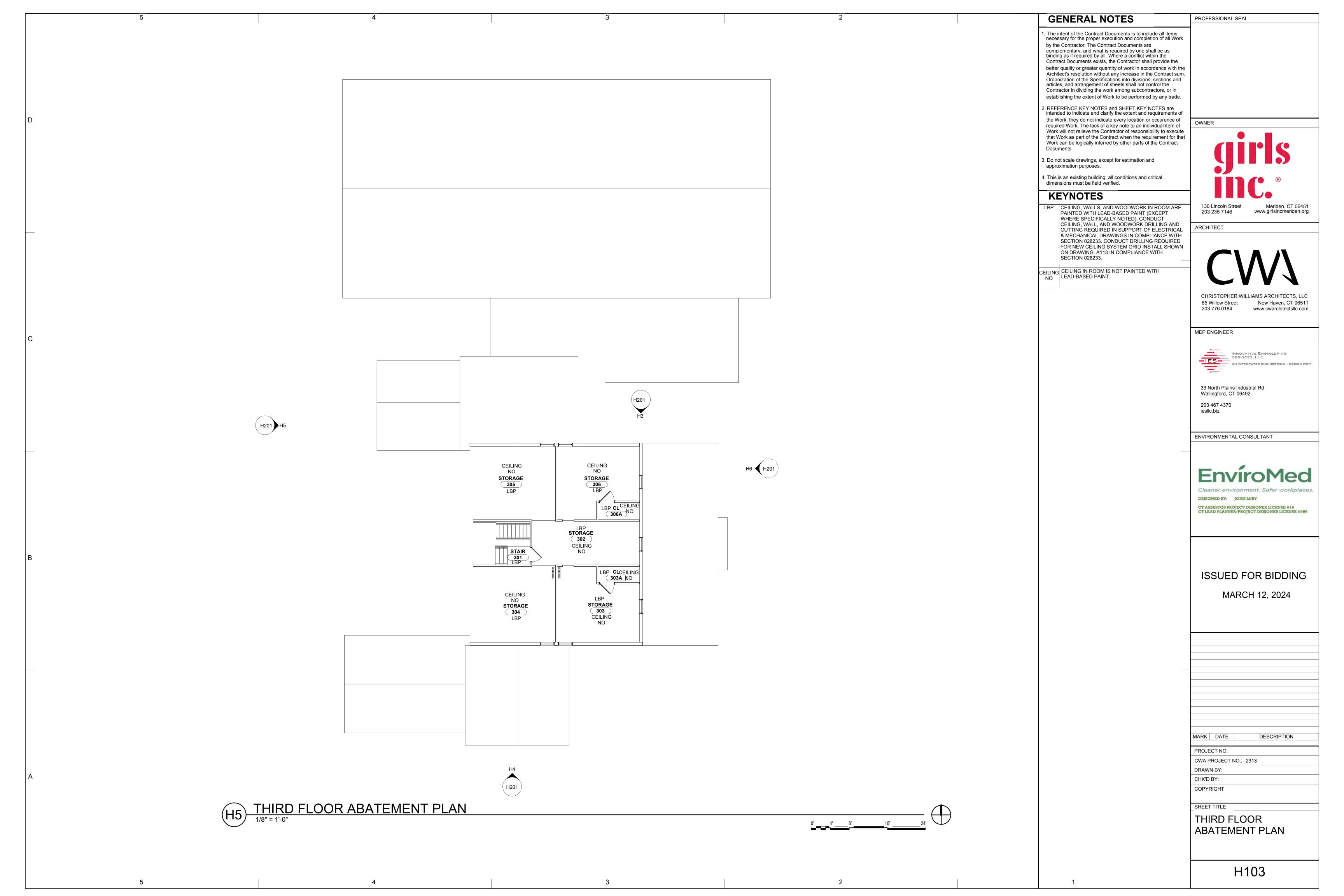
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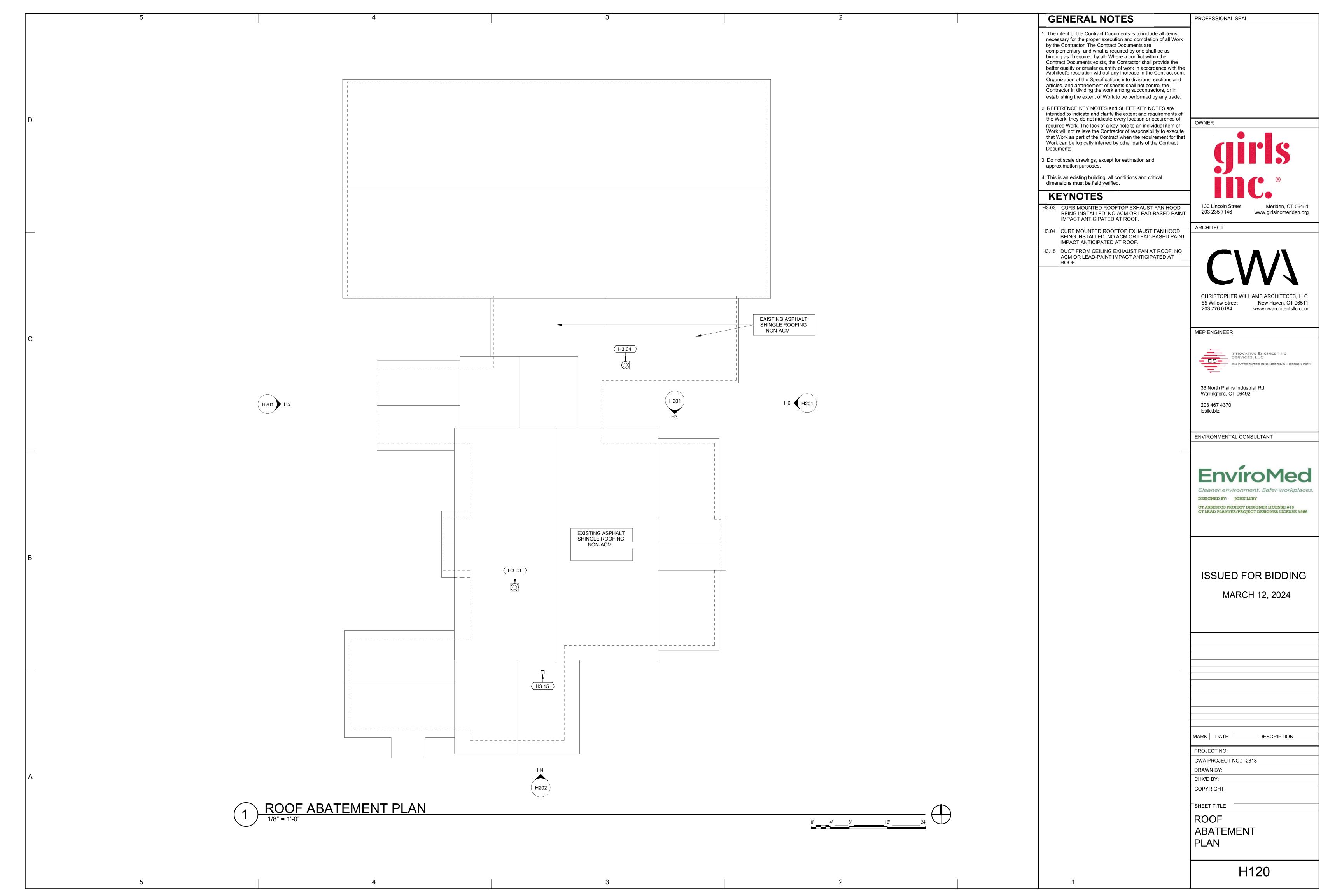
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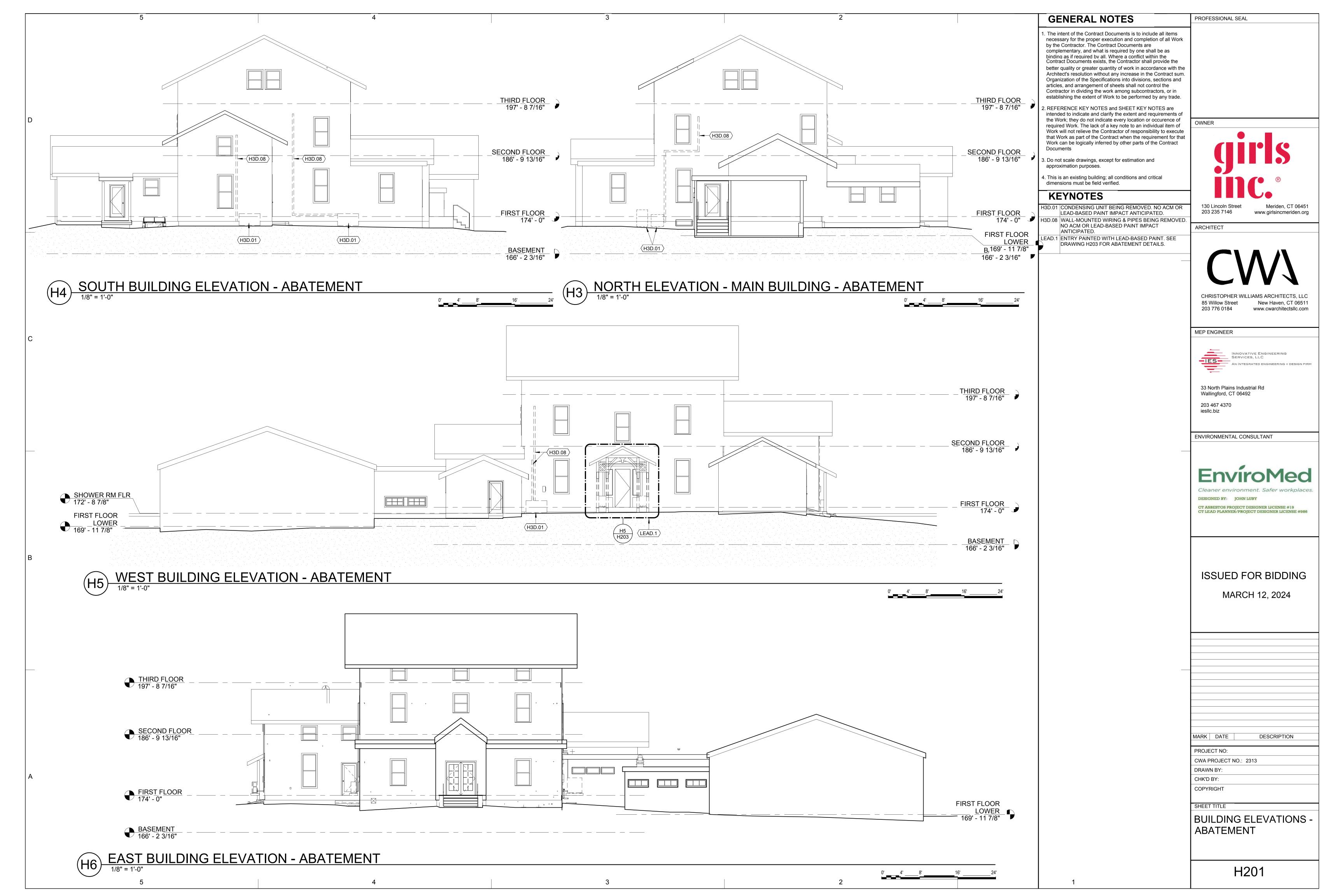
FIRST FLOOR ABATEMENT PLAN

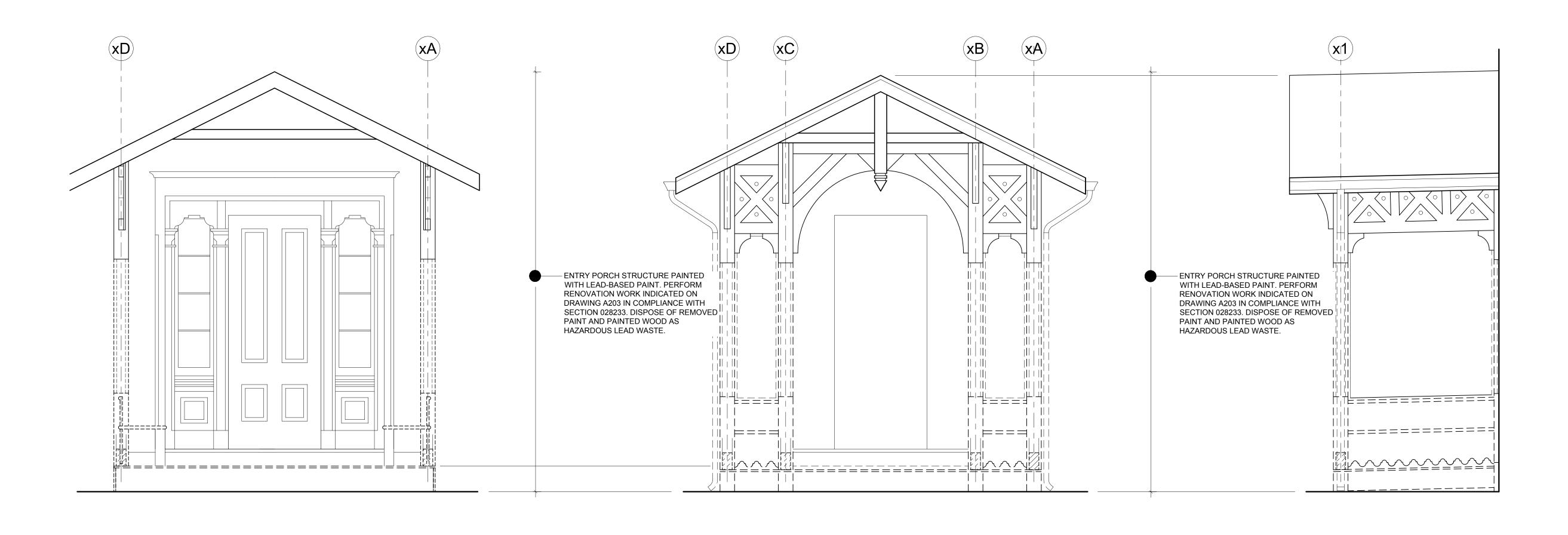
H101











EAST (@ EXT WALL OF BLDG)

EAST (FRONT)

SOUTH (SIDE) NORTH SIM

0' 6" 1' \_\_\_\_ 2' \_\_\_ 4' \_\_\_\_\_6'

PROFESSIONAL SEAL

OWN



J

ARCHITECT



CHRISTOPHER WILLIAMS ARCHITECTS, LLC 85 Willow Street New Haven, CT 06511 203 776 0184 www.cwarchitectsllc.com

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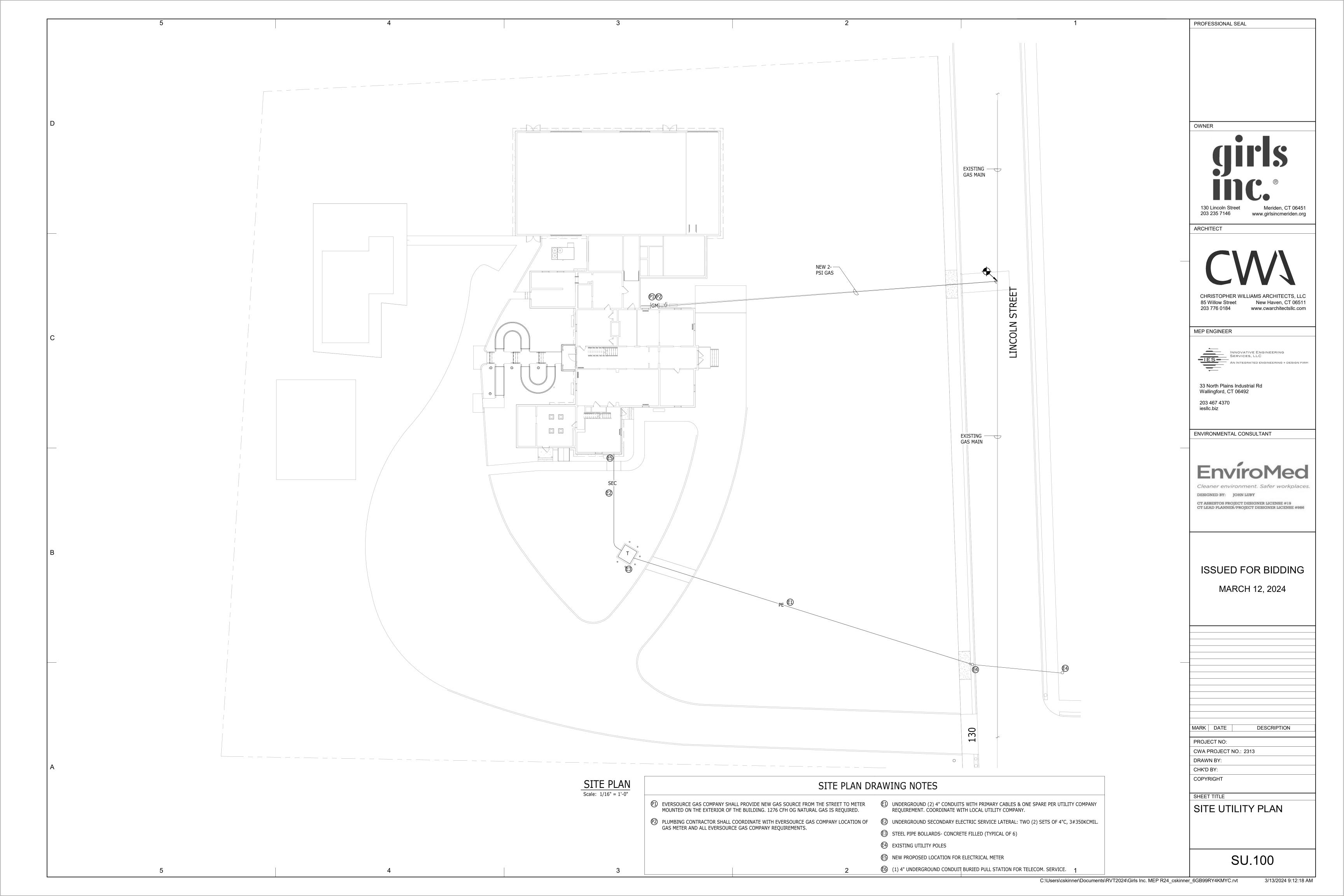
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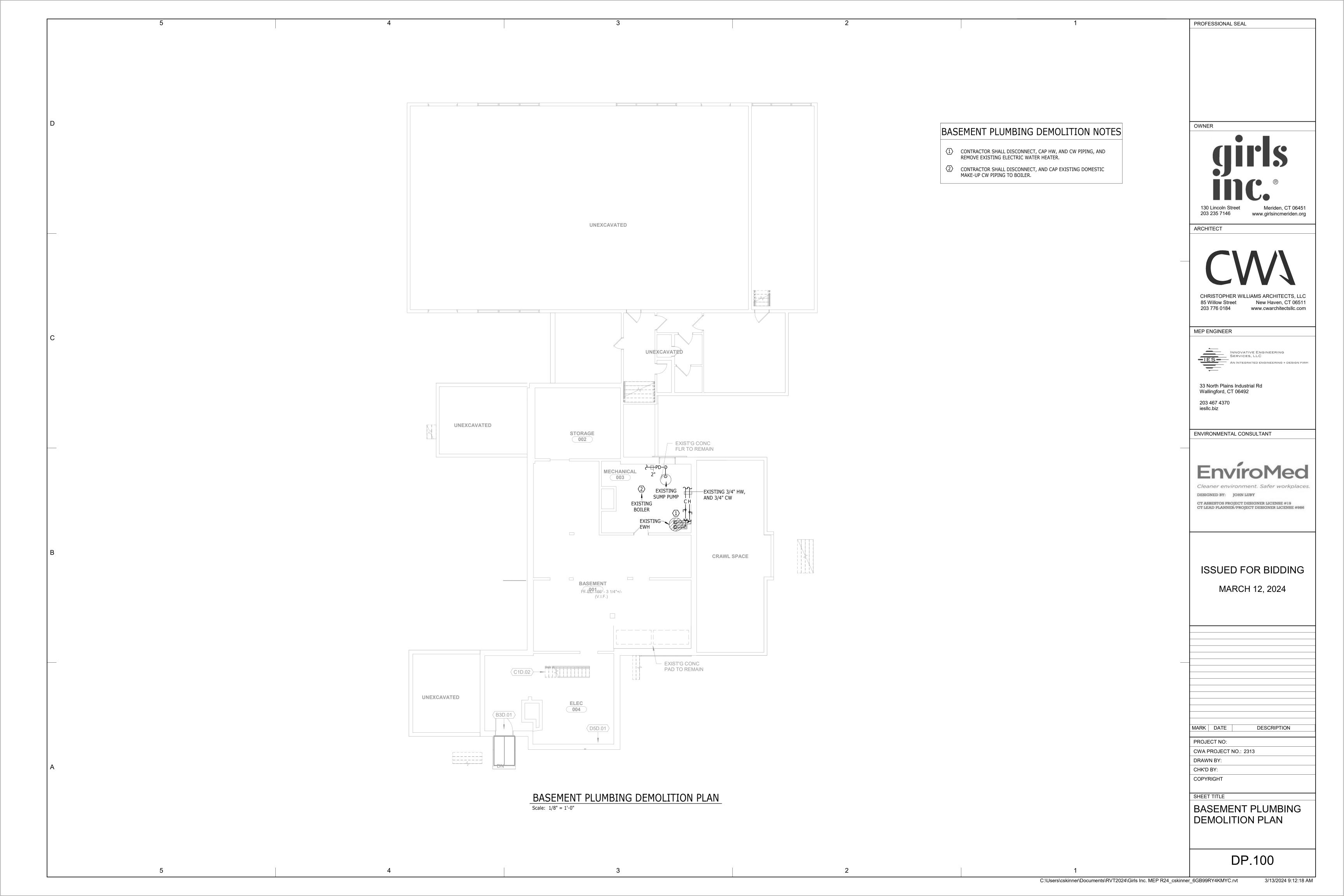
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PORCH ELEVATIONS
ABATEMENT

H203

REAR PORCH ELEVATIONS - ABATEMENT





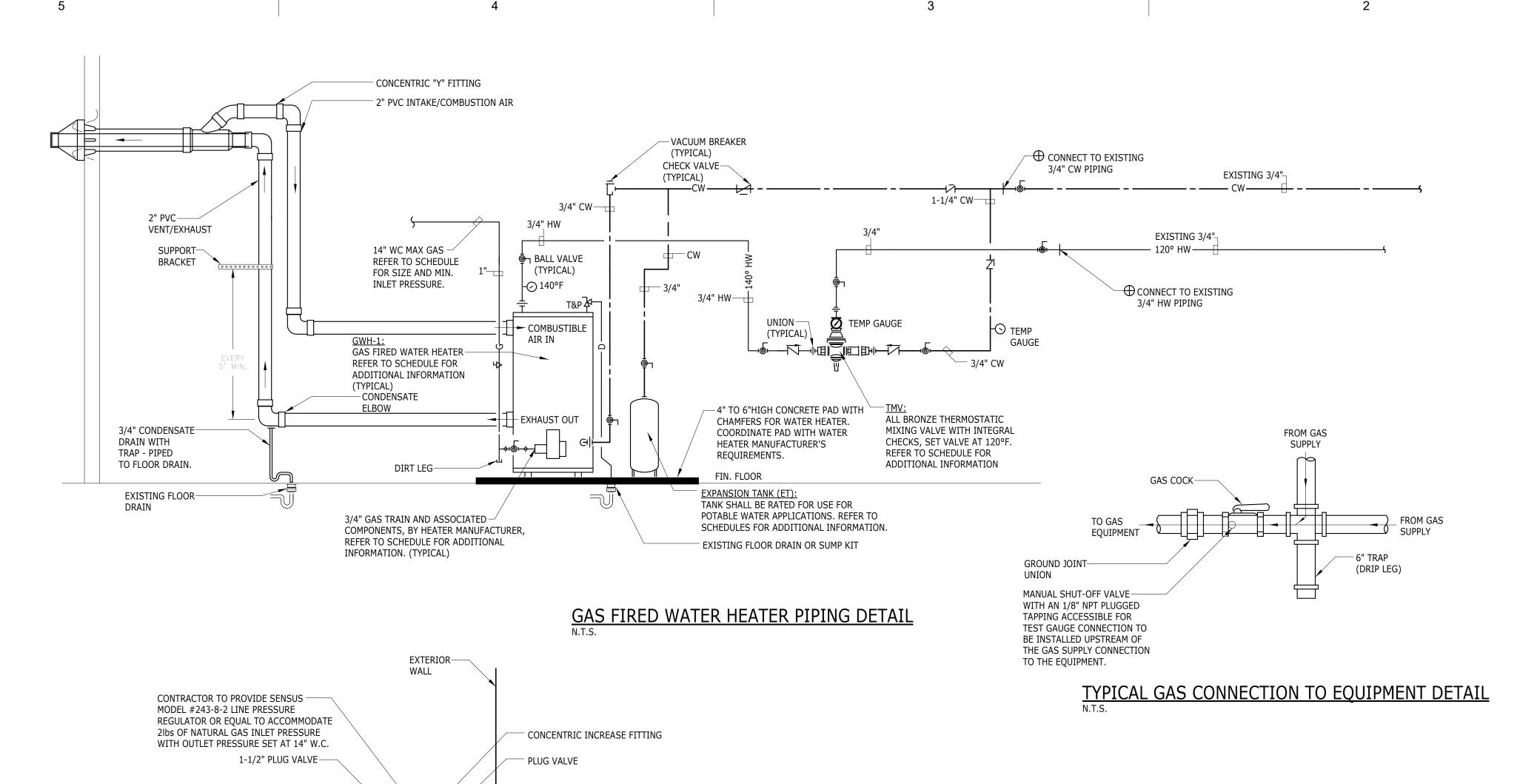
PROFESSIONAL SEAL BASEMENT PLUMBING DRAWING NOTES 1 PROVIDE NEW DOMESTIC GAS HOT WATER HEATER. REFER TO SCHEDULES, AND DETAILS FOR ADDITIONAL INFORMATION. 2 CONNECT NEW 3/4" CW PIPING FROM WATER HEATER TO EXISTING CW PIPING. REFER TO HOT WATER HEATER DETAIL FOR ADDITIONAL 3 CONNECT NEW 3/4" HW PIPING FROM WATER HEATER TO EXISTING HW PIPING. REFER TO HOT WATER HEATER DETAIL FOR ADDITIONAL INFORMATION. 203 235 7146 www.girlsincmeriden.org 4 EXISTING 3/4" HW, AND 3/4" CW PIPING. CONTRACTOR SHALL FIELD VERIFY ALL EXISTING DOMESTIC WATER PIPING IN MECHANICAL **UNEXCAVATED** ARCHITECT ROOM, AND REPLACE EXISTING INSULATION WITH NEW INSULATION. 5 PROVIDE NEW 1-1/2" NATURAL GAS PIPING FROM METER ABOVE ON EXTERIOR WALL OF THE BUILDING. 6 PROVIDE 3" INLET/EXHAUST PIPING FROM GAS WATER HEATER, AND EXTEND UP ABOVE GRADE PER WATER HEATER'S MANUFACTURER'S REQUIREMENTS. 7 CONNECT NEW GAS PIPING TO NEW GAS BOILER. COORDINATE WITH HVAC CONTRACTOR FOR ALL REQUIREMENTS. CHRISTOPHER WILLIAMS ARCHITECTS, LLC MEP ENGINEER INNOVATIVE ENGINEERING SERVICES, LLC

AN INTEGRATED ENGINEERING + C **UNEXCAVATED** 33 North Plains Industrial Rd Wallingford, CT 06492 203 467 4370 iesllc.biz **UNEXCAVATED** ENVIRONMENTAL CONSULTANT STORAGE 002 DESIGNED BY: JOHN LUBY CT ASBESTOS PROJECT DESIGNER LICENSE #19 CT LEAD PLANNER/PROJECT DESIGNER LICENSE #986 BASEMENT 001 **CRAWL SPACE** ISSUED FOR BIDDING MARCH 12, 2024 FF EL: 166' - 3 1/4"+/-(V.I.F.) — EXIST'G BLOCKED UP WINDOW & EXT AREAWAY UNEXCAVATED ELEC 004 MARK DATE DESCRIPTION PROJECT NO: CWA PROJECT NO.: 2313 DRAWN BY: CHK'D BY: COPYRIGHT SHEET TITLE BASEMENT PLUMBING PLAN BASEMENT PLUMBING Scale: 1/8" = 1'-0" PLAN P.100 C:\Users\cskinner\Documents\RVT2024\Girls Inc. MEP R24\_cskinner\_6GB99RY4KMYC.rvt

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 → GAS TO BUILDING LOAD (1276 CFH)

-1-1/2" 2lb GAS FROM METER

NATURAL GAS METER ASSEMBLY DETAIL
N.T.S.

1-1/2" —

GAS METER ASSEMBLY— COORDINATE WITHEVERSOURCE

2lb NATURAL GAS SERVICE IN — GRADE

FROM STREET BY EVERSOURCE

GAS COMPANY

PLUMBING EQUIPMENT SCHEDULE				
<u>SYMBOL</u>	EQUIPMENT TYPE	MANUFACTURER/ MODEL NUMBER	DESCRIPTION	NOTES
<u>GWH</u>	NATURAL GAS WATER HEATER	A.O. SMITH BTX-80	PROVIDE THE CYCLONE HE LIGHT DUTY, POWER VENT, FULLY CONDENSING 50 GALLON GAS WATER HEATER WITH 76,000 BTU INPUT PER HOUR, AND RECOVERY @ 90°F RISE OF 95 GALLONS PER HOUR. ELECTRICAL REQUIREMENTS SHALL BE 120 VOLT, 60 HZ, 5 AMPS. PROVIDE CONDENSATE NEUTRALIZER KIT, MODEL #100112380.	1,2,3

PIPING AND MATERIALS SCHEDULE						
PIPIMG SYSTEM	SIZE	PIPING MATERIALS	JOINTS	FITTINGS	NOTES	
DOMESTIC HOT, COLD & RETURN WATER PIPING	1/2" - 2"	HARD COPPER TUBE: ASTM B88, TYPE L WATER TUBE DRAWN TEMPER	SOLDER FILLER METALS: ASTM B 32, LEAD-FREE ALLOYS	WROUGHT-COPPER SOLDER- JOINT FITTINGS: ASME B16.22, WROUGHT-COPPER PRESSURE FITTINGS	PROVIDE 1" INSULATION ON ALL CW, HW & HWR PIPING IN ALL AREAS	
DOMESTIC HOT, COLD & RETURN WATER PIPING (BELOW SLAB)	1/2" - 2"	SOFT COPPER TUBE: ASTM B88, TYPE K, WATER TUBE DRAWN TEMPER	NO JOINTS UNDER GROUND IF POSSIBLE IF REQUIRED FLARED JOINTS ARE ACCEPTABLE	CAST IRON FLARED FITTINGS	PROVIDE 1/2" INSULATION ON ALL CW & HW PIPING IN ALL AREAS. PROVIDE PVC SLEEVES FOR ALL PIPING UNDER SLAB BETWEEN WALL AND DENTAL EQUIPMENT	
INDIRECT DRAIN PIPING	ALL	COPPER L TUBE: ASTM B 88, DRAINAGE TUBE, DRAWN TEMPER	SOLDER JOINTS: ASTM B 813, WATER - FLUSHABLE FLUX TO END OF TUBE	ASME B16.22, WROUGHT- DWV COPPER PRESSURE FITTINGS	-	
ABOVE GROUND NATURAL GAS PIPING	1/4" - 2"	SCHEDULE 40 BLACK STEEL PIPE, ASTM A53	THREADED	BLACK MALLEABLE-IRON THREADED FITTINGS ASME B16.3 150# CLASS STANDARD PATTERN	ALL PIPING MATERIALS TO BE IN ACCORDANCE WITH N.F.P.A. 54	
ABOVE GROUND NATURAL GAS PIPING	2-1/2" & LARGER	SCHEDULE 40 BLACK STEEL PIPE, ASTM A53	BUTT WELDED OR SOCKET WELDED	WROUGHT BLACK STEEL FITTINGS, ASTM A234	ALL GAS PIPING MATERIALS 2-1/2" & LARGER SHALL BE WELDED IN ACCORDANCE WITH N.F.P.A. 54, A.G.A & N.B.F.U.	

PLUI	MBING PIPING LEGEND
—-c——-	COLD WATER
—н————	HOT WATER
—140°————	HOT WATER 140° F
	WASTE, SANITARY OR SOIL
CD	CONDENSATE WASTE
IW	INDIRECT WASTE
G	GAS (NATURAL OR LPG)
————GV————	GAS VENT
	EXISTING PIPING TO BE REMOVED
G	PIPE DOWN
<del></del>	PIPE DROP
o	PIPE RISE
X	PIPE ANCHOR
	PIPE GUIDE or SLEEVE
	PIPE EXPANSION FITTING (AT BLDG. EXP.JOINTS)
	VIBRATION ISOLATION FITTING

## **ABBREVIATIONS**

	ADDREVIATIONS			
AFF	ABOVE FINISHED FLOOR			
BFP	BACKFLOW PREVENTER DEVICE			
BTU	BRITISH THERMAL UNIT			
C, CW	COLD WATER			
CFH	CUBIC FEET PER HOUR			
CTE	CONNECT TO EXISTING			
EXP	EXPANSION TANK			
GV	GAS VENT			
G	GAS			
GWH	GAS WATER HEATER			
H, HW	HOT WATER			
HB	HOSE BIBB			
HC HC	HANDICAP ACCESSIBLE			
IW	INDIRECT WASTE			
NIC	NOT IN CONTRACT			
PSI	POUNDS PER SQUARE INCH			
T&P	TEMPERATURE & PRESSURE RELIEF VALVE			
TMV	THERMOSTATIC MIXING VALVE			
TYP	TYPICAL			
VIF	VERIFY IN FIELD			
WHA	WATER HAMMER ARRESTOR			

# PLUMBING WATER SPECIALTIES SCHEDULE

SYMBOL	FIXTURE TYPE	MANUFACTURER/ MODEL NUMBER	DESCRIPTION	ACCESSORIES AND TRIM	REMARKS	
ET1	EXPANSION TANK	BELL + GOSSETT CO. MODEL #PTA-20V	EXPANSION TANK: NSF/ANSO 61 DIAPHRAGM, STEEL SHELL, FACTORY PRECHARGED 55 PSIG, X GALLONS TANK VOLUME	-	#3	
RPBP1	REDUCED PRESSURE BACKFLOW PREVENTER	WATTS MODEL # UP TO 1" LF909 1 1/4" TO 2" LF909M1 2 1/2" AND OVER LF909	REDUCED PRESSURE BACKFLOW PREVENTER: ASSE 1013, LEAD FREE REDUCED PRESSURE ZONE ASSEMBLY, PRESSURE DIFFERENTIAL RELIEF VALVE BETWEEN TWO POSITIVE SEATING CHECK VALVES.	SHUT-OFF VALVES, AIR GAP FITTING, STRAINER, TEST COCKS	#1,2,4,5	
TMV	THERMOPLASTIC MIXING VALVE	MORRIS GROUP INTERNATIONAL CONTROLS MV17-2	TEMP CONTROL THERMOPLASTIC MIXING VALVE, LEAD FREE, INTEGRAL STOPS, 5 PSI PRESSURE DROP AT 15 GPM	SHUT-OFF VALVES TEMP GAUGE	#2	
WHA	WATER HAMMER ARRESTOR	PPP MODEL #SC-500A	WATER HAMMER ARRESTOR: CORROSION RESISTANT BRASS	-	#4	

#### REMARKS:

- 1. REFER TO FLOOR PLANS FOR SIZES.
- 2. PROVIDE ISOLATION VALVE ON WATER SUPPLY.
- 3. PROVIDE AT ALL WATER HEATERS, SEE WATER HEATER DETAIL.
- 4. PROVIDE AIR GAP FITTING AND PIPE DRAIN TO NEAREST FLOOR DRAIN.
- 5. MOUNT MAX OF 5'-0" ABOVE FINISHED FLOOR.

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ARCHITECT



CHRISTOPHER WILLIAMS ARCHITECTS, LLC 85 Willow Street New Haven, CT 06511 203 776 0184 www.cwarchitectsllc.com

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33 North Plains Industrial Rd Wallingford, CT 06492 203 467 4370 iesllc.biz

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PLUMBING DETAILS, LEGENDS, NOTES, & SCHEDULES

P.200

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SYSTEMS SHALL BE LESS THAN COMPLETE.

PERMITS AND FEES

SECURE AND PAY COSTS OF PERMITS, CERTIFICATES, LICENSES, INSPECTIONS AND APPROVALS.

**ADJUSTMENTS** 

UPON COMPLETION OF WORK, PERFORM THE FOLLOWING ADJUSTMENT PROCEDURES:

ADJUST SYSTEMS COMPONENTS FOR PROPER PERFORMANCE. OPEN AND CLOSE VALVES, SET IN PROPER OPERATING POSITION.

**ACCESSIBILITY** 

PLACE VALVES, UNIONS, DRAINS, AND ITEMS REQUIRING MAINTENANCE, ADJUSTMENT, OR REPAIR, IN ACCESSIBLE LOCATIONS. COORDINATE ACCESS PANELS WITH ARCHITECT.

REFERENCE PUBLICATIONS

AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM) AND AMERICAN NATIONAL STANDARDS INSTITUTE (ANSI) PUBLICATIONS ARE REFERRED TO HEREIN, BECAUSE THESE PUBLICATIONS ARE REVISED FREQUENTLY, DATES FOLLOWING PUBLICATION NUMBERS HAVE BEEN OMITTED. REFER TO LATEST EDITION.

**COORDINATION OF WORK** 

TRANSMIT TO OTHER TRADES ALL INFORMATION REQUIRED FOR WORK TO BE PROVIDED UNDER THEIR RESPECTIVE SECTIONS IN AMPLE TIME FOR INSTALLATION.

WHEREVER WORK INTERCONNECTS WITH WORK OF OTHER TRADES, COORDINATE WITH OTHER TRADES TO INSURE SOLDER: MAKE UP JOINTS WITH 95-5 TIN-ANTIMONY WIRE SOLDER AND NON-CORROSIVE FLUX. DO NOT USE 50-50 THAT ALL TRADES HAVE THE INFORMATION NECESSARY SO THEY MAY PROPERLY INSTALL ALL THE NECESSARY CONNECTIONS AND EQUIPMENT. IDENTIFY ALL WORK ITEMS (VALVES, DRAINS, ETC.) IN AN APPROVED MANNER IN ORDER THAT THE CEILING SUBCONTRACTOR WILL KNOW WHERE TO INSTALL ACCESS DOORS AND PANELS.

CONSULT WITH OTHER TRADES REGARDING EQUIPMENT SO, WHEREVER POSSIBLE, MOTORS AND CONTROL ARE OF THE SAME MANUFACTURER.

FURNISH AND SET ALL SLEEVES FOR PASSAGE OF PIPES AND CONDUITS THROUGH STRUCTURAL MASONRY AND CONCRETE WALL AND FLOORS, AND ELSEWHERE AS WILL BE REQUIRED FOR THE PROTECTION OF EACH PIPE PASSING THROUGH BUILDING SURFACES.

PROVIDE REQUIRED SUPPORTS AND HANGERS FOR PIPING, FIXTURES AND EQUIPMENT, SO LOADING WILL NOT EXCEED ALLOWABLE LOADINGS OF STRUCTURE.

CONFORM THE PLUMBING WORK TO THE REQUIREMENTS HEREIN. PROVIDE OFFSETS, FITTINGS, DRAINS, AND ACCESSORIES WHICH MAY BE REQUIRED. INVESTIGATE THE STRUCTURAL AND FINISH CONDITIONS AFFECTING THE <u>TESTING</u> WORK, AND ARRANGE THE WORK ACCORDINGLY. PROVIDE SUCH PIPING, FITTINGS, VALVES AND ACCESSORIES AS MAY BE REQUIRED TO MEET SUCH CONDITIONS.

**ELECTRICAL CONNECTIONS** 

POWER SUPPLY WILL BE PROVIDED UNDER DIVISION 16, AND CONNECTIONS MADE TO ANY NEW ELECTRICAL ITEMS. TO FACILITATE ELECTRICAL CONNECTIONS EQUIP ELECTRICAL ITEMS WITH NEMA ENCLOSURES HAVING ADEQUATE KNOCKOUTS, CONNECTORS, TERMINAL BLOCKS AND/OR CONTACTS.

SET SLEEVES IN PLACE BEFORE PLACING CONCRETE, OR SECURELY FASTEN AND GROUT IN PLACE WITH CONCRETE. EXERCISE CARE IN LOCATING AND SETTING OF SLEEVES TO ASSURE ACCURATE ALIGNMENT. IN ABSENCE OF SLEEVES, USE CORE DRILLED HOLES AND PROVIDE CURBS TO PREVENT PASSAGE OF WATER.

FILL VOID SPACES BETWEEN PIPING AND PIPE SLEEVES WITH PENETRATION SEAL, OR APPROVED ELASTROMERIC CAULKING MATERIALS.

**ESCUTCHEON INSTALLATION** 

PROVIDE ESCUTCHEONS ON PIPE PROTRUSIONS AT WALLS, PARTITIONS, CEILING AND FLOORS, ESCUTCHEONS SHALL FIT SNUGLY AROUND PIPING AND COVER SURFACE OPENING.

FIRE STOPPING

FILL VOID SPACE BETWEEN PIPING AND PIPING SLEEVES WITH DOW CORNING 3 - 6548 RTV SILICONE FOAM, OR WITH FIBROUS GLASS SEALED WITH FIRE TESTED AND APPROVED ELASTOMERIC CAULKING MATERIALS.

<u>INSTALLATION - GENERAL</u>

PREPARATION: CUT PIPE AND TUBING ENDS SQUARE, REMOVE BURRS AND REAM TO ORIGINAL BORE. CLEAN JOINT SURFACES PRIOR TO ASSEMBLY. WIPE OFF EXCESS JOINING COMPOUNDS AND FLUX RESIDUE.

SCREWED: USE AMERICAN STANDARD TAPER PIPE THREADS CUT SHARP AND TRUE AND SUITABLE FOR NORMAL ENGAGEMENT. SCREW THREADED ITEMS UP CLOSE TO SHOULDERS WITH NOT MORE THAN THREE INCOMPLETE THREADS EXPOSED. DO NOT USE LAMP WICK, CORD, WOOL OR OTHER "WICKING" MATERIALS. REPAIR LEAKS WITH NEW MATERIALS, DO NOT PEEN OR CAULK. "TEFLON" PIPE JOINT TAPE OR JOINT COMPOUNDS COMPOSED OF RED LEAD AND GRAPHITE GROUND IN LINSEED OIL WILL BE PERMITTED, APPLIED TO MALE THREADS ONLY.

OR OTHER TIN-LEAD SOLDERS.

MECHANICAL COUPLINGS: USE MANUFACTURER'S MATERIALS AND METHODS.

PIPE HANGER AND SUPPORT INSTALLATION

REFER TO MSS-SP-58; STANDARD FOR PIPE HANGERS AND SUPPORTS.

SUPPORT, ANCHOR AND GUIDE PIPING SYSTEMS TO WITHSTAND STATIC AND DYNAMIC LOAD CONDITIONS, TO ALLOW FOR EXPANSION AND CONTRACTION; TO PREVENT VIBRATION AND SWAYING; TO MAINTAIN ALIGNMENT AND MINIMIZE VERTICAL DEFLECTION.

DO NOT SUPPORT PIPING FROM OTHER PIPING OR DUCTWORK. DO NOT USE WIRE, TAPE, METAL BAND, OR OTHER MAKE-SHIFT DEVICES AS MEANS OF SUPPORT OR ATTACHMENT.

GENERAL: TEST PLUMBING SYSTEMS TO SATISFACTION OF BUILDING OFFICIAL. DO NOT CLOSE IN, CONCEAL, OR COVER UP ANY WORK UNTIL IT HAS BEEN TESTED, INSPECTED, AND APPROVED BY ENGINEER AND LOCAL OFFICIALS.

FLUSH PIPING, PRIOR TO TESTING, TO REMOVE FOREIGN MATERIAL WHICH MAY HAVE ENTERED DURING COURSE OF INSTALLATION. CLEAN FILTERS AND STRAINERS AFTER FLUSHING.

DOMESTIC HOT AND COLD WATER: PIPING - HARD DRAWN COPPER TUBING TYPE "L" WITH SOLDERED JOINTS.

DOMESTIC WATER PIPING UNDERGROUND - SOFT COPPER TUBE, ASTM B 88 TYPE K OR L AND WROUGHT - COPPER FITTINGS SOLDER-JOINT, ASME B16.18 OR BRONZE FLANGE TYPE FITTINGS ASME B16.22. PE PIPING ASTM D 2239,

NATURAL GAS PIPING 2" & UNDER SHALL BE SCHEDULE 40 BLACK PIPE, ASTM A53 WITH THREADED BLACK

NATURAL GAS PIPING 2-1/2" & LARGER SHALL BE SCHEDULE 40 BLACK PIPE, ASTM A53 WITH BUTT WELDED OR SOCKET WELDED WROUGHT BLACK STEEL FITTINGS ASTM A234 150# CLASS STANDARD PATTERN. ALL GAS PIPING 2-1/2" & LARGER SHALL BE WELDED IN ACCORDANCE WITH N.F.P.A. 54, A.G.A. & N.B.F.U.

APPLIANCE FLEXIBLE CONNECTION - INDOOR, FIXED - APPLIANCE FLEX CONNECTORS SHALL COMPLY WITH ANSI Z21.24 AND MOVABLE - APPLIANCE FLEX CONNECTORS SHALL COMPLY WITH ANSI Z21.69.

CHECK VALVE: ALL BRONZE, HORIZONTAL SWING, REGRINDING TYPE, Y PATTERN, RENEWABLE SEAT AND DISC, 200

BALL VALVE - 2" AND SMALLER: LEAD FREE BRONZE BODY AND BALL, TEFLON SEATS AND SEALS, LEVER HANDLE,

GAS VALVE - 2" AND SMALLER: BRONZE PLUG VALVE, TWO-PIECE FULL PORT BRONZE BALL VALVE WITH BRONZE

GAS VALVE - 2-1/2" AND LARGER: FLANGED BRONZE PLUG VALVE OR CAST-IRON, NON-LUBRICATED PLUG VALVE.

COMPONENTS: DESIGNED WITH MINIMUM SAFETY FACTOR OF 5; OF ALL METAL CONSTRUCTION; ASSEMBLED WITH CORROSION RESISTANT SQUARE HEAD MACHINE BOLTS AND SQUARE OR HEX HEAD NUTS, STEEL WASHERS; IN

PIPE ATTACHMENTS: CAPABLE OF VERTICAL ADJUSTMENT UNDER LOAD, SHAPED TO OD IF PIPING, SIZED ALLOW

ACOUSTICAL SURFACES: FACTORY PAINTED TO MATCH SURFACE SHEET STEEL

PIPE: SECTIONAL PREMOLDED FIBROUS GLASS, FACTORY APPLIED FLAME RETARDANT VAPOR BARRIER JACKET

VALVES AND FITTINGS: PREMOLED, FIBROUS GLASS FITTING COVERS, OR FABRICATED MITERED SEGMENTS OF PIPE INSULATION, FINISHED WITH 20-20 COUNT GLASS CLOT EMBEDDED IN SURFACE COATING. NO STAPLES, TACKS OR

SURFACE FINISH - EXPOSED: UNIFORM COAT OF SURFACE COATING SURFACE FINISH - CONCEALED: NONE REQUIRED.

WATER PIPING SPECIALTIES

SHOCK ABSORBER: SA: ALL COPPER, MECHANICAL-PNEUMATIC TYPE, HERMETICALLY SEALED BELLOWS, THREADED INLET; 150 PSI WWP. SIZE AND PLACEMENT DETERMINATION: PDI-WH 201 AND A.S.S.E. STANDARD 1010.

PROFESSIONAL SEAL



ARCHITECT

203 235 7146

85 Willow Street

203 776 0184

MEP ENGINEER



CHRISTOPHER WILLIAMS ARCHITECTS, LLC

www.girlsincmeriden.org

New Haven, CT 06511

www.cwarchitectsllc.com



33 North Plains Industrial Rd Wallingford, CT 06492 203 467 4370 iesllc.biz

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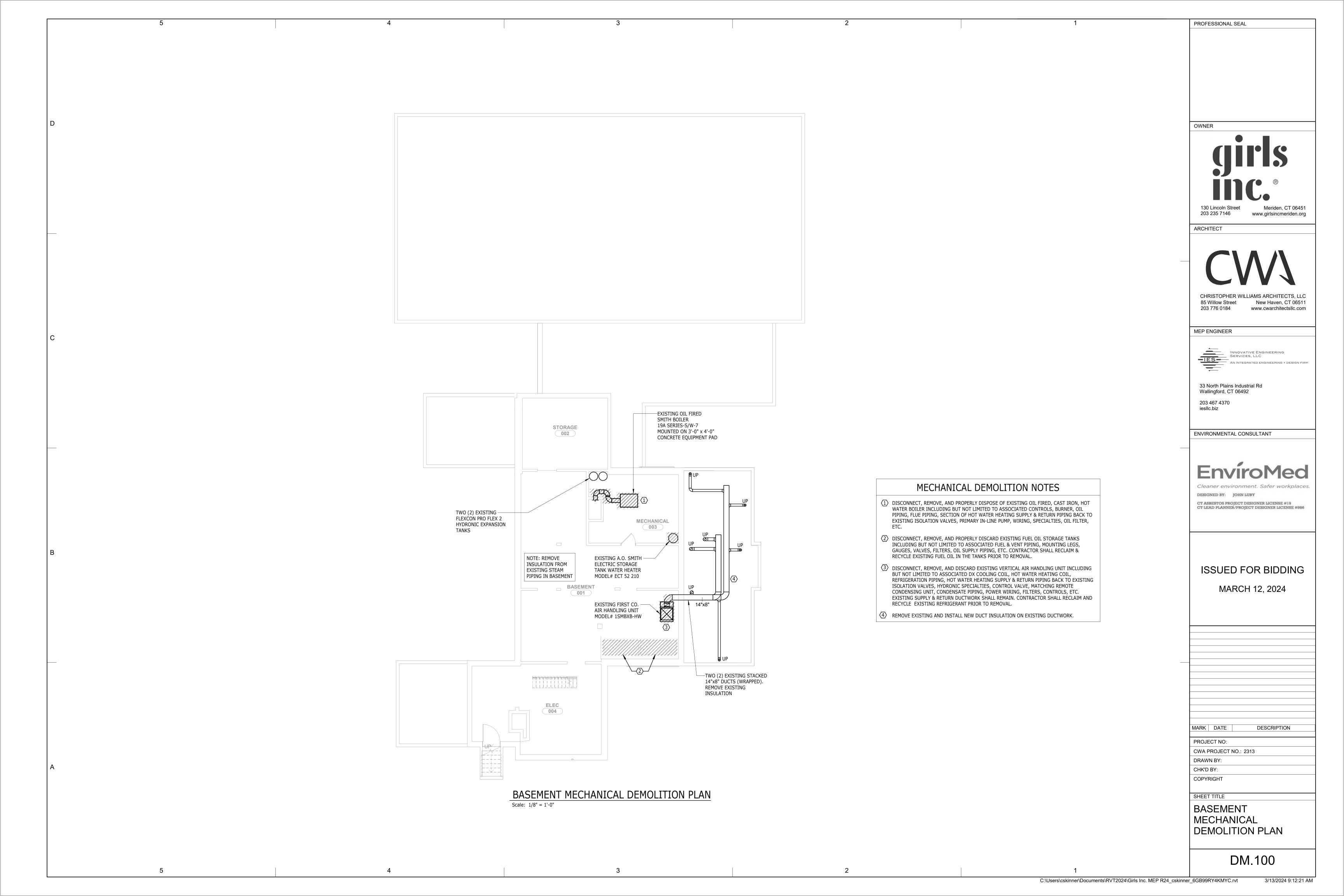
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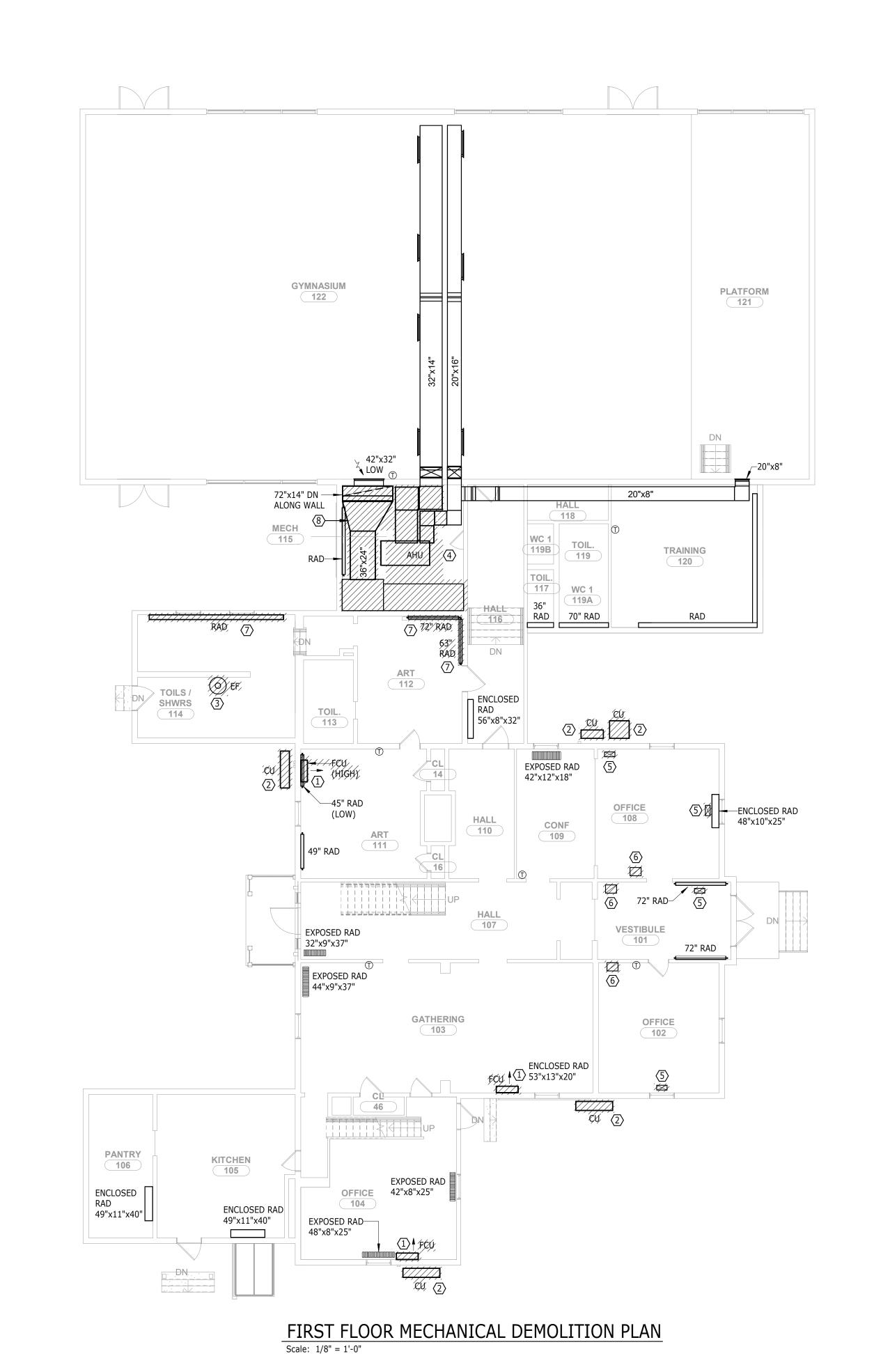
PLUMBING **SPECIFICATIONS** 

P.201

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MECHANICAL DEMOLITION NOTES

- DISCONNECT, REMOVE, AND DISCARD EXISTING WALL MOUNTED DUCTLESS FAN COIL UNIT INCLUDING BUT NOT LIMITED TO ASSOCIATED REFRIGERANT PIPING, CONDENSATE PIPING, CONTROLS, POWER WIRING, ETC.
- DISCONNECT, REMOVE, AND PROPERLY DISCARD EXISTING OUTDOOR CONDENSING UNIT INCLUDING BUT NOT LIMITED TO ASSOCIATED REFRIGERATION PIPING, VALVES, POWER WIRING, MOUNTING PAD, ETC. CONTRACTOR SHALL RECLAIM AND RECYCLE REFRIGERANT IN ACCORDANCE WITH FEDERAL, STATE, AND LOCAL ENVIRONMENTAL REGULATIONS PRIOR
- DISCONNECT, REMOVE, AND DISCARD EXISTING TOILET EXHAUST FAN. EXISTING EXHAUST DUCTWORK AND ELECTRICAL POWER SHALL REMAIN FOR RECONNECTION TO NEW FAN.
- DISCONNECT, REMOVE, AND DISCARD EXISTING SUSPENDED AIR HANDLING UNIT INCLUDING BUT NOT LIMITED TO ASSOCIATED HOT WATER HEATING SUPPLY & RETURN PIPING BACK TO EXISTING ISOLATION VALVES, HYDRONIC SPECIALTIES, CONTROL VALVE, SECTION OF EXISTING SUPPLY & RETURN DUCTWORK, ALL HANGERS & SUPPORTS, ETC.
- 5 DISCONNECT, REMOVE, AND DISCARD EXISTING FLOOR SUPPLY GRILLE.
- (6) DISCONNECT, REMOVE, AND DISCARD EXISTING FLOOR RETURN GRILLE.
- 7 DISCONNECT, REMOVE, AND DISCARD EXISTING BASEBOARD RADIATION ENCLOSURE INCLUDING BUT NOT LIMITED TO FITTINGS, END PIECES, 90° ELBOWS, MOUNTING BRACKETS & HARDWARE.
- DISCONNECT, REMOVE, AND DISCARD EXISTING RETURN DUCTWORK INCLUDING BUT NOT LIMITED TO ASSOCIATED FITTINGS, ACCESSORIES, HANGERS, SUPPORTS, ETC.

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PROFESSIONAL SEAL



130 Lincoln Street Meriden, CT 06451 203 235 7146 www.girlsincmeriden.org

ARCHITECT



CHRISTOPHER WILLIAMS ARCHITECTS, LLC 85 Willow Street New Haven, CT 06511 203 776 0184 www.cwarchitectsllc.com

MEP ENGINEER



33 North Plains Industrial Rd Wallingford, CT 06492 203 467 4370 iesllc.biz

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SHEET TITLE

STILLT TITE

FIRST FLOOR
MECHANICAL
DEMOLITION PLAN

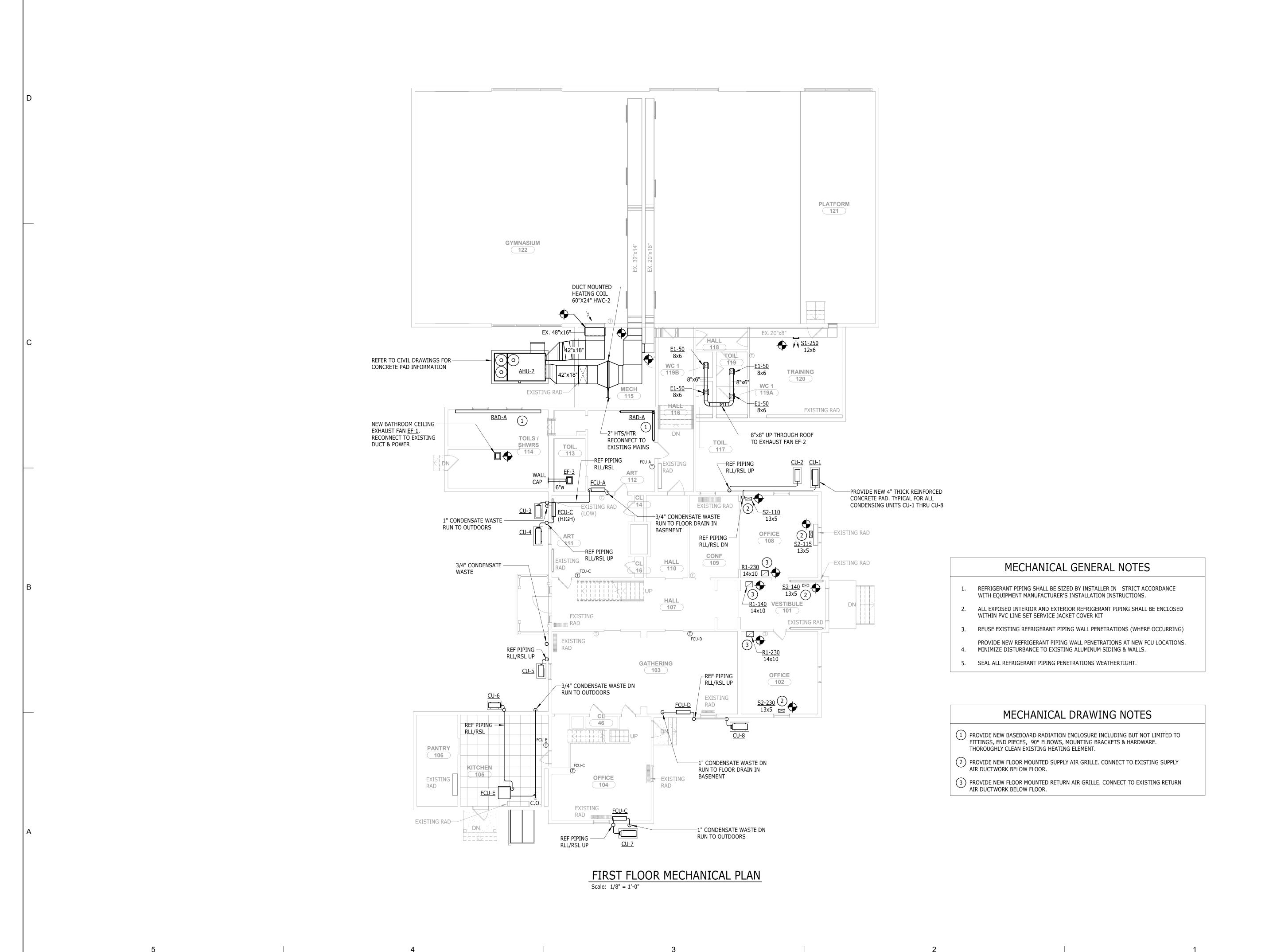
DM.101

PROFESSIONAL SEAL 203 235 7146 www.girlsincmeriden.org ARCHITECT CHRISTOPHER WILLIAMS ARCHITECTS, LLC 85 Willow Street New Haven, CT 06511 203 776 0184 www.cwarchitectsllc.com MEP ENGINEER INNOVATIVE ENGINEERING SERVICES, LLC
AN INTEGRATED ENGINEERING + F 33 North Plains Industrial Rd Wallingford, CT 06492 203 467 4370 iesllc.biz ENVIRONMENTAL CONSULTANT EXPOSED RAD EXPOSED RAD-48"x8"x25" \ 14"x4"x38" 1 \ FC\(\frac{1}{2}\) EXPOSED RAD 36"x8"x37" DESIGNED BY: JOHN LUBY ENCLOSED RAD CLASSROOM CT ASBESTOS PROJECT DESIGNER LICENSE #19 CT LEAD PLANNER/PROJECT DESIGNER LICENSE #986 34 58"x26"x22" EXPOSED RAD 52"x9"x38" CLASSROOM 203 MECHANICAL DEMOLITION NOTES ISSUED FOR BIDDING DISCONNECT, REMOVE, AND PROPERLY DISCARD EXISTING WALL MOUNTED DUCTLESS FAN COIL UNIT INCLUDING BUT NOT LIMITED TO ASSOCIATED REMOTE OUTDOOR CONDENSING MARCH 12, 2024 UNIT, REFRIGERATION PIPING, VALVES, CONDENSATE PIPING, POWER WIRING, CONTROLS, ETC. CONTRACTOR SHALL RECLAIM & RECYCLE EXISTING REFRIGERANT IN ACCORDANCE WITH FEDERAL, STATE & LOCAL ENVIRONMENTAL REGULATIONS PRIOR TO REMOVAL. EXPOSED RAD 14"x4"x38" 212 CLASSROOM EXPOSED RAD 24"x12"x20" 206 KITCHEN -EXPOSED RAD 24"x12"x20" -EXPOSED RAD 16"x3"x13" -EXPOSED RAD OFFICE 20"x8"x30" 210 MARK DATE DESCRIPTION EXPOSED RAD
32"x12"x12"

1) PROJECT NO: CWA PROJECT NO.: 2313 DRAWN BY: CHK'D BY: COPYRIGHT SECOND FLOOR MECHANICAL DEMOLITION PLAN SHEET TITLE Scale: 1/8" = 1'-0" SECOND FLOOR MECHANICAL DEMOLITION PLAN DM.102 C:\Users\cskinner\Documents\RVT2024\Girls Inc. MEP R24\_cskinner\_6GB99RY4KMYC.rvt

PROFESSIONAL SEAL 203 235 7146 www.girlsincmeriden.org ARCHITECT **UNEXCAVATED** CHRISTOPHER WILLIAMS ARCHITECTS, LLC 85 Willow Street New Haven, CT 06511 203 776 0184 www.cwarchitectsllc.com MEP ENGINEER INNOVATIVE ENGINEERING SERVICES, LLC

AN INTEGRATED ENGINEERING + C UNEXCAVATED 33 North Plains Industrial Rd Wallingford, CT 06492 203 467 4370 iesllc.biz -PROVIDE TWO (2) NEW GAS FIRED, CONDENSING BOILERS B-1 & B-2. STORAGE PROVIDE NEW 4" HIGH CONCRETE ENVIRONMENTAL CONSULTANT UNEXCAVATED 002 HOUSE KEEPING PAD. SEE PLUMBING DETAILS REF PIPING RLL/RSL UP TO CU-1 DESIGNED BY: JOHN LUBY CT ASBESTOS PROJECT DESIGNER LICENSE #19 CT LEAD PLANNER/PROJECT DESIGNER LICENSE #986 TWO (2) EXISTING -MECHANICAL FLEXCON PRO FLEX 2 3/4" HTS/HTR PIPING. -HYDRONIC CONNECT TO EXISTING **EXPANSION TANKS** MAINS REPLACE INSULATION FOR -TWO (2) EXISTING 14"x8" ISSUED FOR BIDDING EXISTING DUCTWORK STACKED DUCTS CRAWL SPACE SERVING AHU-1 —REINSTALL & REINSTATE DUCTWORK. COORDINATE MARCH 12, 2024 WITH PLACEMENT OF VERTICAL HEAT PUMP AIR——— CONCRETE FLOOR SLAB HANDLING UNIT <u>AHU-1</u>. MOUNT ON FIELD BUILT ANGLE IRON FRAME ANCHORED TO FLOOR. PROVIDE DUCT MOUNTED HOT WATER COIL <u>HWC-1</u>
ON SUPPLY DUCT MAIN. MECHANICAL GENERAL NOTES **EXTEND & RECONNECT** 8x6 O.A. DUCT WITH — VOLUME DAMPER SET EXISTING 3/4" HTS & HTR PIPING AT 150 CFM REFRIGERANT PIPING SHALL BE SIZED BY INSTALLER IN STRICT ACCORDANCE WITH EQUIPMENT MANUFACTURER'S INSTALLATION INSTRUCTIONS. ALL EXPOSED INTERIOR AND EXTERIOR REFRIGERANT PIPING SHALL BE ENCLOSED WITHIN PVC LINE SET SERVICE JACKET COVER KIT REUSE EXISTING REFRIGERANT PIPING WALL PENETRATIONS (WHERE OCCURRING) - EXIST'G BLOCKED PROVIDE 12x12 O.A.
INTAKE LOUVER WITH
SHEET METAL PLENUM <u>L-1</u>.
CUT & PATCH MASONRY **UP WINDOW & EXT** PROVIDE NEW REFRIGERANT PIPING WALL PENETRATIONS AT NEW FCU LOCATIONS. AREAWAY 4. MINIMIZE DISTURBANCE TO EXISTING ALUMINUM SIDING & WALLS. ELEC UNEXCAVATED 004 WALL AS REQUIRED. SEAL AIR & WATER TIGHT 5. SEAL ALL REFRIGERANT PIPING PENETRATIONS WEATHERTIGHT. MARK DATE DESCRIPTION PROJECT NO: CWA PROJECT NO.: 2313 DRAWN BY: CHK'D BY: COPYRIGHT BASEMENT MECHANICAL PLAN SHEET TITLE BASEMENT Scale: 1/8" = 1'-0" MECHANICAL PLAN M.100 C:\Users\cskinner\Documents\RVT2024\Girls Inc. MEP R24\_cskinner\_6GB99RY4KMYC.rvt



OWNER

PROFESSIONAL SEAL

130 Lincoln Street Meriden, CT 06451 203 235 7146 www.girlsincmeriden.org

ARCHITECT

CVV

CHRISTOPHER WILLIAMS ARCHITECTS, LLC 85 Willow Street New Haven, CT 06511 203 776 0184 www.cwarchitectsllc.com

MEP ENGINEER

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33 North Plains Industrial Rd Wallingford, CT 06492 203 467 4370

ENVIRONMENTAL CONSULTANT



DESIGNED BY: JOHN LUBY

CT ASBESTOS PROJECT DESIGNER LICENSE #19 CT LEAD PLANNER/PROJECT DESIGNER LICENSE #986

ISSUED FOR BIDDING

MARCH 12, 2024

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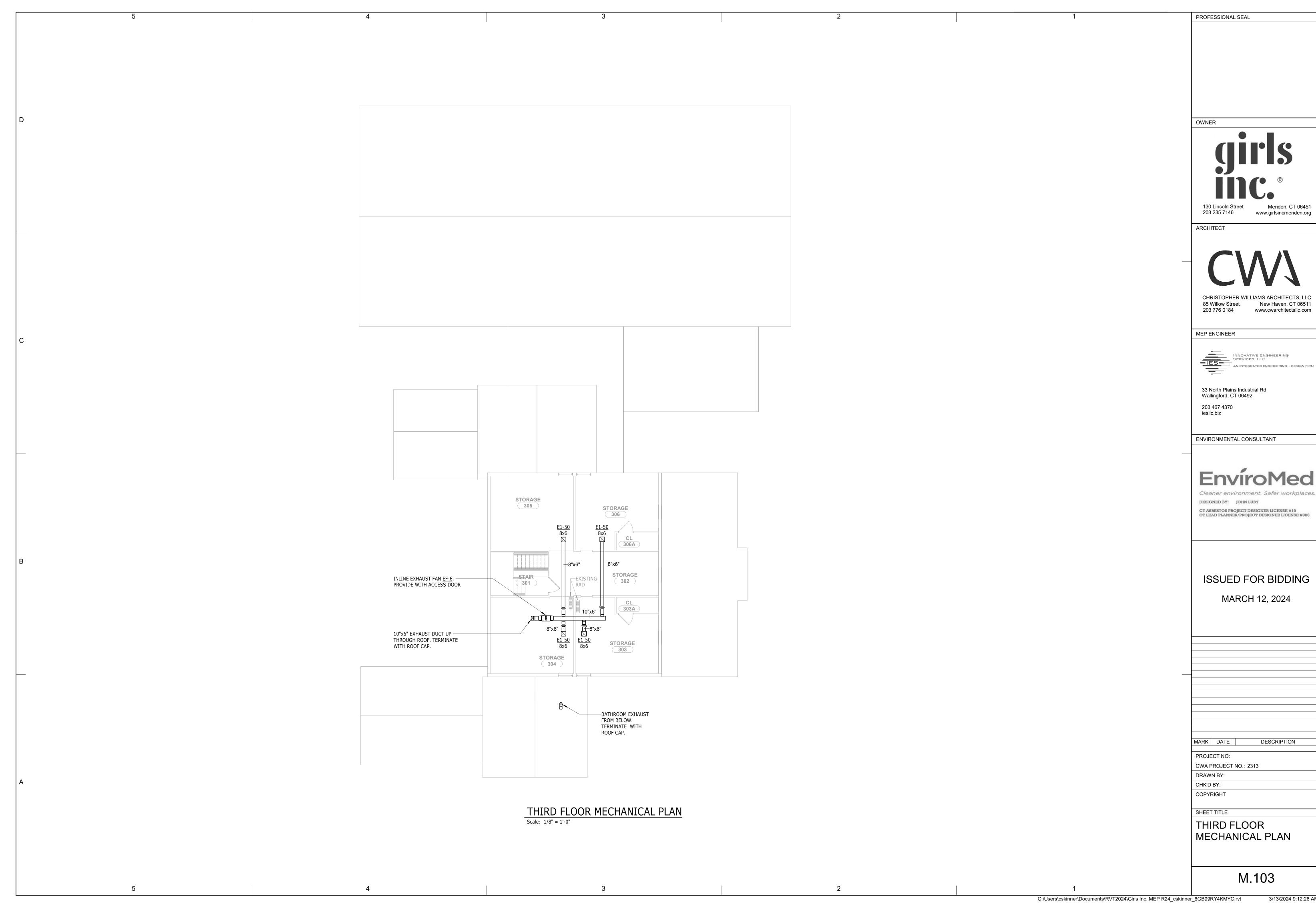
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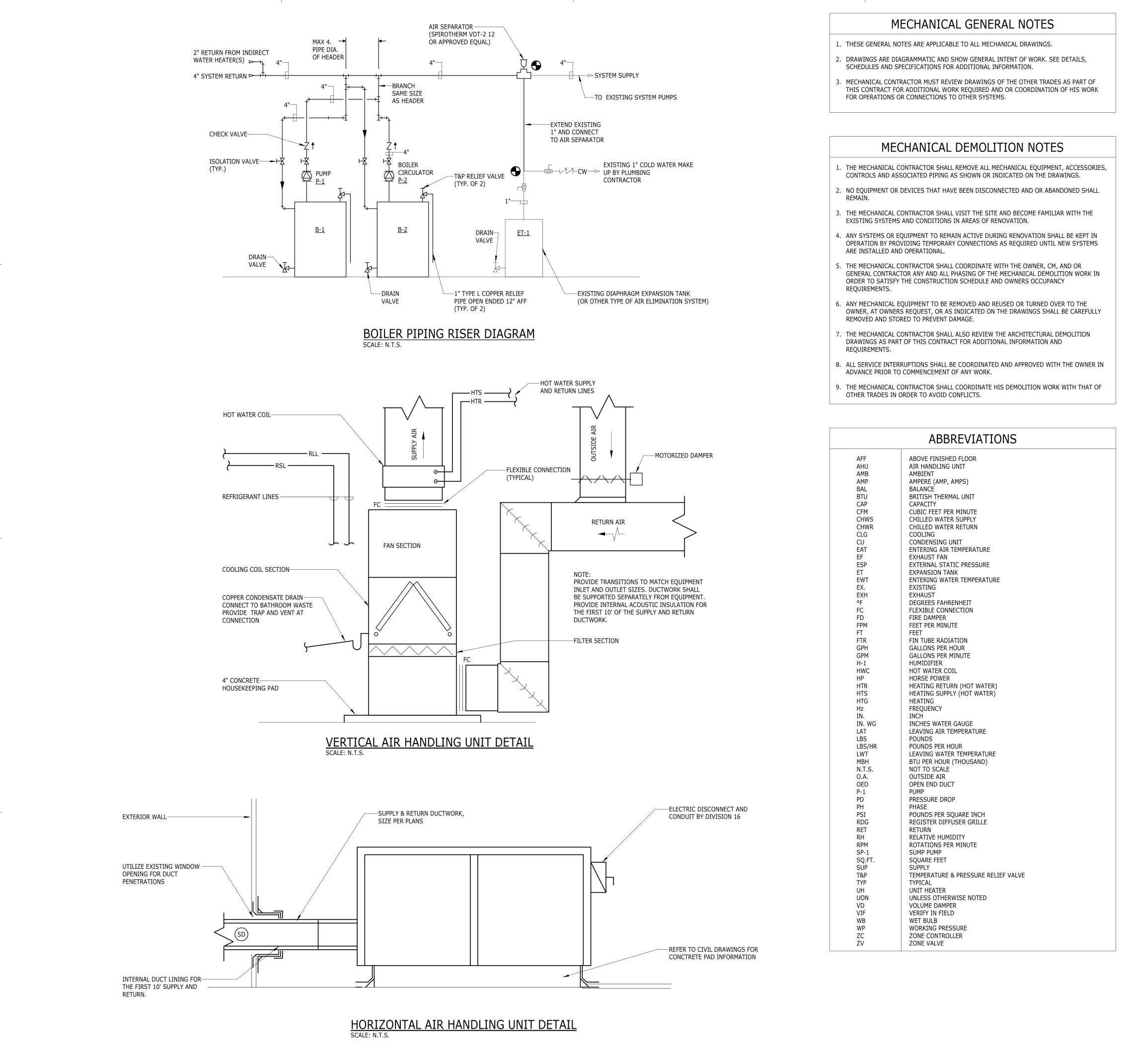
FIRST FLOOR MECHANICAL PLAN

M.101

PROFESSIONAL SEAL 203 235 7146 www.girlsincmeriden.org ARCHITECT CHRISTOPHER WILLIAMS ARCHITECTS, LLC 85 Willow Street New Haven, CT 06511 203 776 0184 www.cwarchitectsllc.com MEP ENGINEER INNOVATIVE ENGINEERING SERVICES, LLC
AN INTEGRATED ENGINEERING + F 33 North Plains Industrial Rd Wallingford, CT 06492 203 467 4370 iesllc.biz -3/4" CONDENSATE WASTE DN ENVIRONMENTAL CONSULTANT RLL/RSL DN EXISTING — WALL EXISTING RAD 6"ø/🗖 3/4" CONDENSATE WASTE FCL DESIGNED BY: JOHN LUBY — NEW BATHROOM CEILING EXHAUST FAN <u>EF-4</u> CT ASBESTOS PROJECT DESIGNER LICENSE #19 CT LEAD PLANNER/PROJECT DESIGNER LICENSE #986 REF PIPING — RLL/RSL DN CLASSROOM CLASSROOM 34 203 EXISTING RAD ISSUED FOR BIDDING 3/4" CONDENSATE — WASTE DN RUN TO OUTDOORS MARCH 12, 2024 PASS. EXISTING OFFICE 212 CLASSROOM FCU-A ① 206 EXISTING RAD MECHANICAL GENERAL NOTES REF PIPING -RLL/RSL DN 1. REFRIGERANT PIPING SHALL BE SIZED BY INSTALLER IN STRICT ACCORDANCE WITH EQUIPMENT MANUFACTURER'S INSTALLATION INSTRUCTIONS. 2. ALL EXPOSED INTERIOR AND EXTERIOR REFRIGERANT PIPING SHALL BE ENCLOSED WITHIN PVC LINE SET SERVICE JACKET COVER KIT DN DN FCU-C -REF PIPING RLL/RSL DN 3. REUSE EXISTING REFRIGERANT PIPING WALL PENETRATIONS (WHERE OCCURRING) -3/4" CONDENSATE WASTE DN PROVIDE NEW REFRIGERANT PIPING WALL PENETRATIONS AT NEW FCU LOCATIONS. 4. MINIMIZE DISTURBANCE TO EXISTING ALUMINUM SIDING & WALLS. NEW BATHROOM — CEILING EXHAUST FAN <u>EF-5</u> RAD 5. SEAL ALL REFRIGERANT PIPING PENETRATIONS WEATHERTIGHT. MARK DATE DESCRIPTION OFFICE 210 ---6"∅ UP PROJECT NO: THROUGH ROOF TO ROOF CAP EXISTING FCU-C CWA PROJECT NO.: 2313 DRAWN BY: CHK'D BY: 3/4" CONDENSATE -WASTE DN COPYRIGHT RLL/RSL DN SHEET TITLE SECOND FLOOR MECHANICAL PLAN

Scale: 1/8" = 1'-0" SECOND FLOOR MECHANICAL PLAN M.102 C:\Users\cskinner\Documents\RVT2024\Girls Inc. MEP R24\_cskinner\_6GB99RY4KMYC.rvt





DIFFUSER/GRILLE - SUPPLY GRILLE/REGISTER - RETURN GRILLE/REGISTER - EXHAUST SIDEWALL GRILLE/REGISTER - SUPPLY/RETURN/EXHAUST AIR FLOW DIRECTION INDICATOR - SUPPLY AIR FLOW DIRECTION INDICATOR - RETURN DUCT RISER - SUPPLY/COMBUSTION AIR DUCT DROP - SUPPLY/COMBUSTION AIR DUCT RISER - RETURN/EXHAUST DUCT DROP - RETURN/EXHAUST EXHAUST FAN THERMOSTAT VOLUME DAMPER MOTORIZED DAMPER REDUCER HOT WATER SUPPLY - HEATING — — — HTR — — — HOT WATER RETURN - HEATING REFRIGERANT PIPING - LIQUID LINE & SUCTION LINE CONDENSATE WASTE DIRECTION OF FLOW PIPE DOWN PIPE DROP O PIPE RISE PLUGGED OR CAPPED PIPE EXISTING TO BE REMOVED CONNECT TO EXISTING

MECHANICAL LEGEND

PROFESSIONAL SEAL OWNER 203 235 7146 ARCHITECT CHRISTOPHER WILLIAMS ARCHITECTS, LLC New Haven, CT 06511 85 Willow Street 203 776 0184 MEP ENGINEER INNOVATIVE ENGINEERING SERVICES, LLC 33 North Plains Industrial Rd Wallingford, CT 06492 203 467 4370 iesllc.biz ENVIRONMENTAL CONSULTANT DESIGNED BY: JOHN LUBY CT ASBESTOS PROJECT DESIGNER LICENSE #19 CT LEAD PLANNER/PROJECT DESIGNER LICENSE #986 ISSUED FOR BIDDING MARCH 12, 2024

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M.200

MECHANICAL NOTES,

LEGEND, & DETAILS

DESCRIPTION

MARK DATE

PROJECT NO:

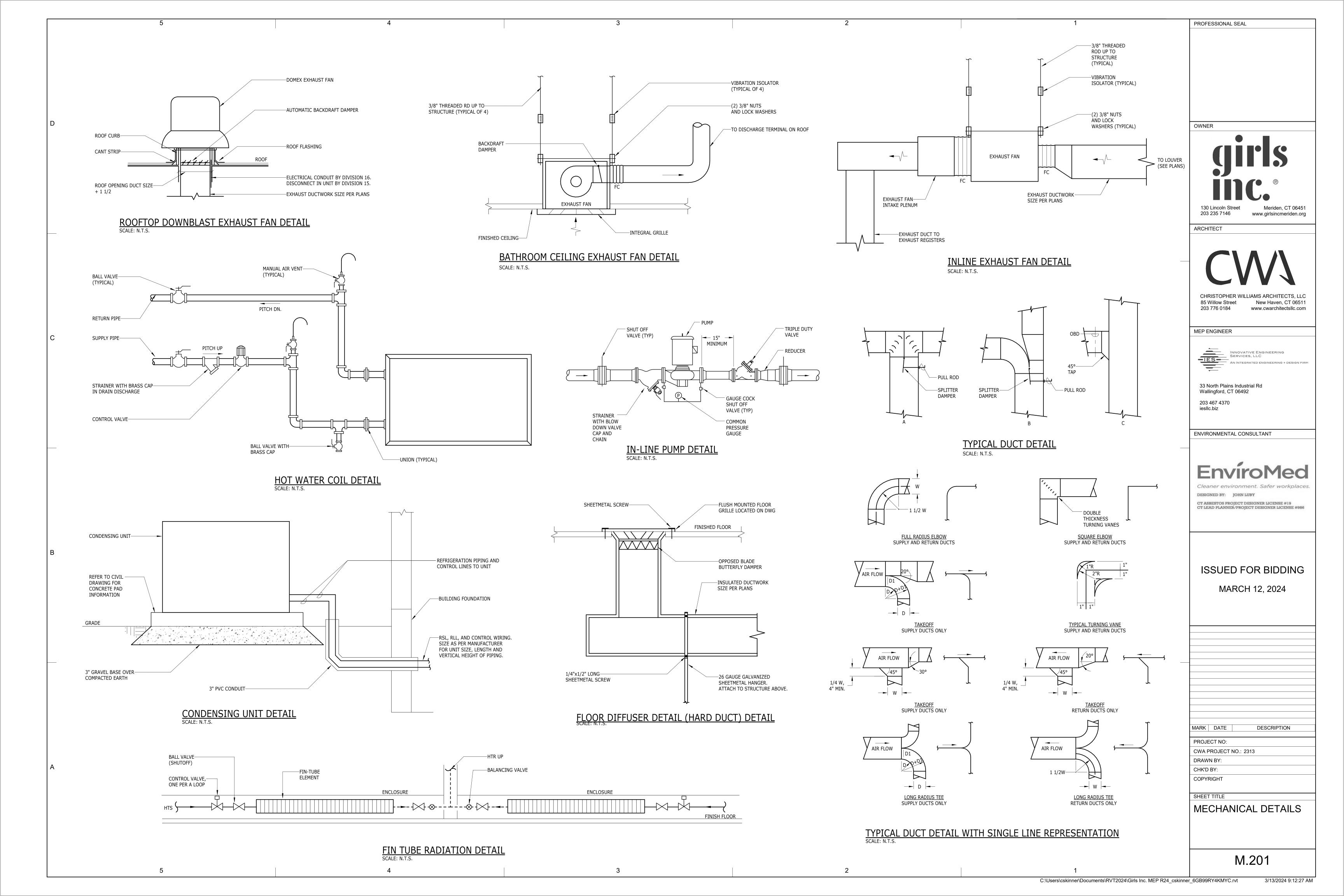
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SHEET TITLE

CWA PROJECT NO.: 2313



NOTES:

. PROVIDE WITH DISCONNECT SWITCH R410A REFRIGERANT

PROVIDE EXTRA SET OF MERV-13 FILTER REPLACEMENTS. REFRIGERATION PIPING SHALL BE SIZED BY INSTALLER IN ACCORDANCE WITH EQUIPMENT MANUFACTURER'S INSTALLATION INSTRUCTIONS. PROVIDE SERVICE ISOLATION VALVES.

	PACKAGED AIR HANDLING UNIT SCHEDULE																				
	GENERAL DATA									DX CO	IL DATA				FILTER DATA			ELEC	CTRICAL DATA		
SYMBOL	MANUFACTURER MODEL NUMBER	SERVING	LOCATION	COOLING (CFM)	HEATING (CFM)	ESP (IN. WG)	NOMINAL COOLING (TONS)	TOTAL COOLING (MBH)	SENSIBLE COOLING (MBH)	EAT WB/DB (DEG F)	LAT WB/DB (DEG F)	SUCTION TEMP (DEG F°)	FACE VELOCITY (FPM)	FILTER TYPE	EFFICIENCY	SIZE	ВНР	VOLT	PHASE	MCA/MOCP	NOTES
AHU-2	CARRIER 50FC-M16A5A5-0A3C0	GYMNASIUM 122	OUTDOORS	6,000	6,000	1.0	15	183	136	67/80	57.5/59.0	45° F	500 MAX	2" PLEATED	MERV-8	18"x24"x2"	2.76	208	3	67.0/80A	1,2,3,4,5,6

1. PROVIDE NEMA 3R DISCONNECT SWITCH

2. PROVIDE DUCT SMOKE DETECTORS IN THE SUPPLY & RETURN AIR STREAMS 3. PROVIDE FACTORY CONTROLS, PROGRAMMABLE THERMOSTAT, LOW VOLTAGE WIRING, DEVICES, ETC. FOR FULLY OPERATIONAL SYSTEM

4. PROVIDE WITH SIDE DUCT DISCHARGE.

5. PROVIDE WITH ECONOMIZER DAMPERS, WEATHER HOODS, BAROMETRIC RELIEF

6. PROVIDE WITH EXTRA SET OF MERV-8 REPLACEMENT FILTERS.

	BOILER SCHEDULE															
	MANUEA CTUBER /		I-B-R		MAX. PSI		BURI	NER DATA				VENIT O INITAICE	COMPLICATION	THEDMAI	WETCHE	
SYMBOL	MANUFACTURER/ MODEL NUMBER	LOCATION	NET OUTPUT MBH	BOILER HP	WORKING (PSIG)	GAS INPUT (MBH)	GAS OUTPUT (MBH)	VOLT	PHASE	AMPS	EWT/LWT	VENT & INTAKE DIAMETER	COMBUSTION EFFICIENCY	THERMAL EFFICIENCY	WEIGHT (LBS)	NOTES
B-1	THERMAL SOLUTIONS AMP-800	MECHANICAL 003	776.0	23.2	160	800	776	120	1	8	160/180	6"	97%	97%	560	1,2,3,4,5,6,7
B-2	THERMAL SOLUTIONS AMP-800	MECHANICAL 003	776.0	23.2	160	800	776	120	1	8	160/180	6"	97%	97%	560	1,2,3,4,5,6,7

1. PROVIDE DISCONNECT SWITCH.

2. PROVIDE ALL SAFETY CONTROLS (T&P RELIEF VALVE, LWCO, HIGH LIMIT, ETC.).

3. PROVIDE WITH CONDENSATE NEUTRALIZATION KIT.

4. PROVIDE WITH FACTORY CONTROLLER, SENSORS, LOW VOLTAGE WIRING FOR FULLY OPERATIONAL SYSTEM.

5. PROVIDE COMBUSTION AIR INTAKE AND VENT PIPING IN ACCORDANCE WITH MANUFACTURER'S INSTALLATION INSTRUCTIONS.

6. PROVIDE WITH FACTORY OUTDOOR RESET CONTROL WITH DOMESTIC HOT WATER PRIORITY. 7. PROVIDE GAS REGULATOR TO REDUCE GAS PRESSURE TO 7" W.C. AT BOILERS.

	FAN SCHEDULE													
SYMBOL	MANUFACTURER MODEL NUMBER	LOCATION	SERVING	TYPE	AIR FLOW CFM	ESP IN. WS.	FAN RPM	DRIVE	CONTROL	BHP (W)	HP (W)	ELECTRICAL V-PH-RPM	SONES (LWA)	NOTES
EF-1	LOREN COOK GC-420	TOILETS/ SHOWERS 114	TOILETS/ SHOWERS 114	BATHROOM CEILING	200	0.4	1145	DIRECT	WALL SWITCH	0.08	1/10 HP	120-1-1725	2.9	2,3,4
EF-2	LOREN COOK ACED90C17DEC	ROOF	TOIL 119/ WC 119A	ROOF DOWNBLAST	200	0.375	1322	DIRECT	WALL SWITCH	0.23	1/4 HP	120-1-1725	5.0	1,5,6
EF-3	LOREN COOK GC-142	TOILET 204	TOILET 204	BATHROOM CEILING	100	0.25	1000	DIRECT	WALL SWITCH	0.08	1/10 HP	120-1-1725	1.9	2,3,4
EF-4	LOREN COOK GC-142	TOILET 204	TOILET 204	BATHROOM CEILING	100	0.25	1000	DIRECT	WALL SWITCH	0.08	1/10 HP	120-1-1725	1.9	2,3,4
EF-5	LOREN COOK GC-142	TOILET 209	TOILET 209	BATHROOM CEILING	100	0.25	1000	DIRECT	WALL SWITCH	0.08	1/10 HP	120-1-1725	1.9	2,3,4
EF-6	LOREN COOK GN-420	STORAGE 304	THIRD FLOOR	INLINE	200	0.25	1360	DIRECT	RUNS CONTINOUSLY	77	1/10 HP	120-1-1725	2.0	1,2,3,4

NOTES:

1. PROVIDE DISCONNECT SWITCH. 2. PROVIDE FACTORY WALL CAP (LOREN COOK WCR6 OR WCG-6).

3. PROVIDE FACTORY HANGING ISOLATOR KIT.

4. PROVIDE FLEX CONNECTION AT INLET & OUTLET. 5. PROVIDE FACTORY ROOF CURB WITH SELF-ACTING BACKDRAFT DAMPER.

6. PROVIDE ECM MOTOR.

	PUMP SCHEDULE													
SYMBOL	MANUFACTURER MODEL NUMBER	TYPE	LOCATION	SYSTEM SERVED	WATER/ GLYCOL	CAPCITY GPM	CAPACITY FT OF HEAD	WATER TEMP (F°)	FLANGE S/D	ELECTRICAL DATA	POWER HP/BHP	MOTOR SPEED	NOTES	
P-1	ARMSTRONG 4380-0205-001.5	INLINE	MECHANICAL 003	BOILER B-1	WATER	80.0	35 FT	180° F	2"	208V-3PH	1.5	2,993	1,2,3	
P-2	ARMSTRONG 4380-0205-001.5	INLINE	MECHANICAL 003	BOILER B-2	WATER	80.0	35 FT	180° F	2"	208V-3PH	1.5	2,993	1,2,3	

1. PROVIDE SENSORLESS CONTROL WITH INTEGRAL VFD.

2. INTERLOCK WITH BOILER CONTROLLER TO ENABLE AND CONTROL PUMP SPEED. 3. PROVIDE DIGITAL DISPLAY WITH FLOW RATE READOUT.

				LOUVE	R SCH	EDULE				
SYMBOL	MANUFACTURER MODEL NUMBER	SYSTEM SERVED	AIRFLOW (CFM)	MAXIMUM VELOCITY (FPM)	AIR P.D. (IN. WG)	NOMINAL WIDTH (IN.)	NOMINAL HEIGHT (IN.)	MINIMUM FREE AREA (SQ. FT.)	MAXIMUM WATER PENETRATION (OZ./SQ. FT.)	NOTES
L-1	RUSKIN ELF375DX	AHU-1	150	750	0.05"	12"	12"	3.21	0.01 @ 873 FPM	1,2,3

ALUMINUM CONTRUCTION.

2. COLOR/FINISH SHALL BE SELECTED BY OWNER. 3. WEATHER-RESISTANT, DRAINABLE LOUVER.

HOT WATER COIL SCHEDULE

SYMBOL	MANUFACTURER MODEL NUMBER	SYSTEM SERVED	TYPE	AIR FLOW (CFM)	TOTAL CAPACITY (MBH)	EAT DEG F° DB	LAT DEG F° DB	WATER FLOW GPM	WATER P.D. FT. H <sub>2</sub> O	EWT/LWT DEG F°	AIR P.D. IN. H <sub>2</sub> O	NOTES
HWC-1	CARRIER SFI COILS HWC-600	AHU-1	HW	600	28.7	50.0	94.2	2.5	0.5	180/160	0.22	1,2,3
HWC-2	CARRIER SFI COILS HWC-6000	AHU-2	HW	6,000	329.8	45.0	95.8	32.5	4.4	180/160	0.22	1,2,3

HW = HOT WATERNOTES:

SYMBOL

RAD-A

1. PROVIDE WITH 5/8" COPPER TUBES AND BRANDED ALUMINUM FINS.

2. 2-WAY MODULATING CONTROL VALVE SHALL BE SUPPLIED BY OWNER'S ATC VENDOR, INSTALLED BY M.C.

3. PIPE IN ACCORDANCE WITH DETAIL ON M-2.01

FIN TUBE RADIATION SCHEDULE HOT WATER MANUFACTURER EWT CONNECTION ROWS OF ELEMENT **ENCLOSURE** NOTES CAPACITY MODEL NUMBER (DEG F) SIZE ELEMENT LENGTHS BTU/HR/LF RITTLING MODEL ETO 3/4"C, 3/4" 1,030 180 10-5/8" 1,2,3 PLANS 4-1/4 x 4-1/4 - 48

NOTES:

AIR COOLED CONDENSING UNIT SCHEDULE COOLING MANUFACTURER SYSTEM ELECTRICAL ELECTRICAL AIR TEMP LOCATION NOTES CAPACITY TEMP MODEL NUMBER SERVED MCA-VOLT-PH MOCP DB/WB (DEG F°) TOTAL MBH (DEG F°) DAIKIN 45° F AHU-1 OUTDOORS 18.0 91.0/77.0 16.5-208-1 20A RZQ18TBVJUA

NOTES: PROVIDE DISCONNECT SWITCH

2. PROVIDE 4" THICK REINFORCED CONCRETE PAD. 3. COOLING AND HEATING RATINGS AT 95°F (SUMMER) AND -4°F (WINTER).

4. R410A REFRIGERANT

	GRILLE, DIFFUSER AND REGISTER SCHEDULE												
SYMBOL	MANUFACTURER	DUTY	TYPE	BORDER	C	ONSTRUCTIO	N	NOTES					
STMBOL	MODEL NUMBER	DOTT	IIFL	TYPE	OBD	FRAME	BLADES	NOTES					
S1	TITUS S300RL	SUPPLY	D.D.	DUCT MOUNTED	STEEL	STEEL	STEEL	2,3,4,7					
S2	TITUS CT-541 SERIES	SUPPLY	L.F.	FLOOR	STEEL	STEEL	STEEL	2,4,5,7					
R1	TITUS CT-540 SERIES	RETURN	L.F.	FLOOR	STEEL	STEEL	STEEL	2,4,5,7					
E1	KREUGER S80	EXHAUST	L.F.	CEILING	-	ALUMINUM	ALUMINUM	4,5,7					

L.F. - LOUVERED FACE

D.D. - DIRECTIONAL DIFFUSER

DOUBLE DEFLECTION. 4. FACE VELOCITY 600 FPM MAX. 5. 45° DEFLECTION (FIXED). 6. 45° DEFLECTION (FULLY ADJUSTABLE).

7. NC LEVEL NOT TO EXCEED 25. 8. INSULATED PLENUM BOOT. 9. HINGED CORE WITH 1" DISPOSABLE FILTER.

1. SQUARE TO ROUND TRANSITION. 2. OPPOSED BLADE DAMPER.

-FLOW (CFM) 12x12 ──NECK SIZE TYPICAL RDG TYPICAL RDG

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CHRISTOPHER WILLIAMS ARCHITECTS, LLC 85 Willow Street New Haven, CT 06511 203 776 0184 www.cwarchitectsllc.com

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33 North Plains Industrial Rd Wallingford, CT 06492 203 467 4370 iesllc.biz

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MECHANICAL SCHEDULES

M.202

	VRF CONDENSING UNIT SCHEDULE													
SYMBOL	MANUFACTURER MODEL NUMBER	TYPE	CORRECTED COOLING CAPACITY MBH	CORRECTED HEATING CAPACITY MBH	ELECTRICAL DATA MCA	ELECTRICAL DATA VOLT-PH	TONS CONNECTED LOAD	NOTES						
CU-2	DAIKIN RXL12WMVJU9	HEAT PUMP	10.6	13.4	12.2	208-1	1.0	1,2						
CU-3	DAIKIN RXL09WMVJU9	HEAT PUMP	9.0	10.9	8.7	208-1	0.75	1,2						
CU-4	DAIKIN 3MXL24WMVJU	HEAT PUMP	24.0	24.0	20.1	208-1	2.0	1,2						
CU-5	DAIKIN RXL09WMVJU9	HEAT PUMP	9.0	10.9	8.7	208-1	0.75	1,2						
CU-6	DAIKIN RX12WMVJU9	HEAT PUMP	10.8	13.5		208-1	1.0	1,2						
CU-7	DAIKIN 2MXL18WMVJU9	HEAT PUMP	17.8	18.5	17.0	208-1	1.5	1,2						
CU-8	DAIKIN 3MXL24WMVJU	HEAT PUMP	24.0	24.0	20.1	208-1	2.0	1,2						

FCU-E - 1 TON KITCHEN 105

1. NOMINAL COOLING CAPACITIES ARE BASED ON INDOOR COIL EAT OF 80°/67° (DB/WB), OUTDOOR OF 95°F.

2. NOMINAL HEATING CAPACITIES ARE BASED ON INDOOR COIL EAT OF 70° (DB), OUTDOOR OF -4°F (WB).

CU-6 VRF PIPING DIAGRAM SCALE: N.T.S.

		GENERAL DAT	ГА			FAN DATA		HEATING DATA	COOLIN	G DATA	(NOT IN	ELECTRICAL CLUDING ELECTR	IC HEAT)	
SYMBOL	MANUFACTURER MODEL NUMBER	AREA SERVED	TYPE/ INSTALLED	REF PIPE LIQUID/SUCTION	AIR FLOW TOTAL CFM	ESP IN. W.C. SWITCH SETTING	SPEED SETTING	HTG CAP FULL LOAD MBH	TOTAL CLG FULL LOAD MBH	SENS CLG FULL LOAD MBH	GENERAL V/HZ/PH	MIN CIRC AMPS	MAX FUSE SIZE	NOT
FCU-A	DAIKIN FTX09WMVJU9	SEE PLANS	WALL MOUNTED	1/4" / 3/8"	417	0	HIGH	10.9	9.0	6.75	208/60/1	0.4 A	15 A	1,2
FCU-B	DAIKIN FTX12WMJU9	SEE PLANS	WALL MOUNTED	1/4" / 3/8"	434	0	HIGH	13.4	10.6	7.95	208/60/1	0.4 A	15 A	1,2
FCU-C	DAIKIN FTXS09WVJU9	SEE PLANS	WALL MOUNTED	1/4" / 3/8"	420	0	HIGH	10.9	9.0	6.75	208/60/1	0.4 A	15 A	1,2
FCU-D	DAIKIN FTXS12WVJU9	SEE PLANS	WALL MOUNTED	1/4" / 3/8"	438	0	HIGH	13.4	10.6	7.95	208/60/1	0.4 A	15 A	1,2
FCU-E	DAIKIN FFQ12W2VJU9	KITCHEN 105	4-WAY CASSETTE CEILING RECESSED	1/4" / 3/8"	427	0	HIGH	13.4	10.6	7.95	208/60/1	0.6 A	15 A	1,2

FCU-D - 1 TON GATHERING 103

CU-8 VRF PIPING DIAGRAM

SCALE: N.T.S.

FCU-D - 1 TON CLASSROOM 206

NOTES:

2. COOLING CAPACITY RATING AT 95°F, AMBIENT HEATING CAPACITY RATING AT -4°F.

3. PROVIDE CONDENSATE PIPING TO OUTDOORS OR INDIRECT WASTE.

CU-2 VRF PIPING DIAGRAM

CU-3 VRF PIPING DIAGRAM

SCALE RETS

CU-4 VRF PIPING DIAGRAM

SCALE RETS

CU-4 VRF PIPING DIAGRAM

SCALE RETS

CU-5 VRF PIPING DIAGRAM

SCALE RETS

CU-6 VRF PIPING DIAGRAM

SCALE RETS

CU-7 VRF PIPING DIAGRAM

SCALE RETS

CU-8 VRF PIPING DIAGRAM

SCALE RETS

CU-9 VRF PIPING DIAGRAM

FCU-C - 0.75 TON OFFICE 104

FCU-C - 0.75 TON OFFICE 210

CU-7 VRF PIPING DIAGRAM SCALE: N.T.S.

ISSUED FOR BIDDING

CT ASBESTOS PROJECT DESIGNER LICENSE #19 CT LEAD PLANNER/PROJECT DESIGNER LICENSE #986

PROFESSIONAL SEAL

203 235 7146 www.girlsincmeriden.org

CHRISTOPHER WILLIAMS ARCHITECTS, LLC 85 Willow Street New Haven, CT 06511

INNOVATIVE ENGINEERING SERVICES, LLC

AN INTEGRATED ENGINEERING + F

33 North Plains Industrial Rd Wallingford, CT 06492

ENVIRONMENTAL CONSULTANT

DESIGNED BY: JOHN LUBY

www.cwarchitectsllc.com

ARCHITECT

203 776 0184

MEP ENGINEER

203 467 4370

iesllc.biz

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SHEET TITLE

MECHANICAL VRF SCHEDULES & DIAGRAMS

M.203

THE GENERAL SCOPE OF THE HVAC WORK IS TO REMOVE EXISTING SYSTEMS, MODIFY THE EXISTING SYSTEMS, AND PROVIDE NEW SYSTEMS AS INDICATED ON

THE WORK TO BE DONE UNDER THIS DIVISION OF THE SPECIFICATIONS INCLUDE THE FURNISHING OF ALL EQUIPMENT, SUPPLIES, LABOR, SUPERVISION AND ALL MATERIALS NOT SPECIFICALLY MENTIONED BUT NECESSARY OR REQUIRED TO PROVIDE COMPLETE AND FULLY OPERATIONAL HVAC SYSTEMS. IT IS THE INTENTION OF THE SPECIFICATIONS AND DRAWINGS TO CALL FOR FINISHED WORK, TESTED AND READY FOR OPERATION.

IT IS THE INTENT THAT ALL MECHANICAL WORK AND MATERIALS NECESSARY TO COMPLETE THE ENTIRE PROJECT IN ACCORDANCE WITH THE CONTRACT PLANS AND SPECIFICATIONS, WHETHER SPECIFICALLY MENTIONED HERE OR NOT, SHALL BE FURNISHED. ALL WORK AND MATERIALS NECESSARY TO FULFILL THIS INTENT SHALL BE SUPPLIED UNDER THE MECHANICAL SPECIFICATIONS WITHOUT ADDITIONAL COST TO THE OWNER.

'FURNISH' OR 'PROVIDE' - TO FURNISH, ERECT, INSTALL AND CONNECT UP COMPLETE AND READY FOR OPERATION PARTICULAR WORK REFERRED TO, UNLESS

'WORK' - LABOR, MATERIALS, EQUIPMENT, APPARATUS, CONTROLS, ACCESSORIES AND ALL OTHER ITEMS CUSTOMARILY FURNISHED AND/OR REQUIRED FOR PROPER AND COMPLETE INSTALLATION OF WORK.

'EXPOSED' - NOT INSTALLED UNDERGROUND OR 'CONCEALED' AS DEFINED ABOVE.

'INDICATE' OR 'SHOWN' - AS INDICATED OR SHOWN ON DRAWINGS OR SPECIFIED WITH SPECIFICATIONS.

'PIPING' - PIPE, FITTINGS, FLANGES, VALVES, CONTROLS, HANGERS, TRAPS, DRAINS, INSULATION AND ITEMS CUSTOMARILY OR REQUIRED IN CONNECTION WITH OR RELATING TO SUCH PIPING.

'SUPPLY' - TO PURCHASE, PRODUCE, ACQUIRE AND DELIVER COMPLETE WITH ALL RELATED ITEMS.

'INSTALL' - TO ERECT, MOUNT AND CONNECT UP COMPLETE WITH ALL RELATED ACCESSORIES.

'NOTED' - AS INDICATED ON DRAWINGS AND/OR SPECIFIED.

CODES, RULES, PERMITS AND FEES

THIS CONTRACTOR SHALL GIVE ALL NECESSARY NOTICES, OBTAIN ALL PERMITS AND PAY ALL STATE AND LOCAL TAXES, FEES AND OTHER COSTS IN CONNECTION WITH HIS WORK; FILE ALL NECESSARY PLANS, PREPARE ALL DOCUMENTS AND OBTAIN ALL NECESSARY APPROVALS OF ALL STATE AND LOCAL DEPARTMENTS HAVING JURISDICTION; OBTAIN ALL REQUIRED CERTIFICATES OF INSPECTION FOR HIS WORK AND DELIVERY OF SAME TO THE OWNER BEFORE REQUEST FOR ACCEPTANCE AND FINAL PAYMENT FOR THE WORK.

THIS CONTRACTOR SHALL INCLUDE IN THE WORK, WITHOUT EXTRA COST TO THE OWNER, ANY LABOR, MATERIALS, SERVICES, APPARATUS, DRAWINGS (IN ADDITION TO CONTRACT DRAWINGS AND DOCUMENTS), IN ORDER TO COMPLY WITH ALL APPLICABLE LAWS, ORDINANCES, RULES AND REGULATIONS WHETHER OR NOT SHOWN ON THE DRAWINGS AND/OR SPECIFIED.

THIS CONTRACTOR SHALL PERFORM AND FILE ALL TESTS IN ACCORDANCE WITH THE CURRENT REGULATIONS OF THE STATE AND LOCAL AUTHORITIES. HE SHALL FURNISH AND INSTALL SIGNS REQUIRED BY THE STATE AND LOCAL AUTHORITIES.

ALL MATERIALS FURNISHED AND ALL WORK INSTALLED SHALL COMPLY WITH THE RULES AND RECOMMENDATIONS OF THE NATIONAL BOARD OF FIRE UNDERWRITERS, WITH ALL REQUIREMENTS OF LOCAL UTILITIES COMPANIES, WITH THE RECOMMENDATIONS OF THE FIRE INSURANCE RATING ORGANIZATION HAVING JURISDICTION.

CODES, REGULATIONS AND STANDARDS

ALL MECHANICAL WORK SHALL BE PERFORMED IN ACCORDANCE WITH THE FOLLOWING APPROVED CODES, REGULATIONS AND STANDARDS:

IBC - INTERNATIONAL BUILDING CODE, 2021 EDITION, AS AMENDED BY THE STATE OF CONNECTICUT 2022 AMENDMENTS. IMC - INTERNATIONAL MECHANICAL CODE, 2021 EDITION. WITH 2022 CONNECTICUT AMENDMENTS.

IFC - INTERNATIONAL FIRE CODE, 2021 EDITION, AS AMENDED BY THE STATE OF CONNECTICUT 2022 AMENDMENTS.

2022 CONNECTICUT STATE FIRE SAFETY COD

STATE DEMOLITION CODE

LOCAL BUILDING CODE NFPA - NATIONAL FIRE PROTECTION CODE

NFPA 70 - NATIONAL ELECTRICAL CODE, 2020 EDITION, AS AMENDED BY THE STATE OF CONNECTICUT 2022 AMENDMENTS.

NFPA 72 - NATIONAL FIRE ALARM CODE, 2019 EDITION

NFPA 99 - HEALTH CARE FACILITIES CODE, 2021 EDITION

NFPA 101 - LIFE SAFETY CODE, 2021 EDITION, AS AMENDED BY THE STATE OF CONNECTICUT 2022 AMENDMENTS.

IECC - INTERNATIONAL ENERGY CONSERVATION CODE, 2021, AS AMENDED BY THE STATE OF CONNECTICUT 2022 AMENDMENTS.

ICC/ANSI A117.1, 2017, ACCESSIBLE AND USABLE BUILDINGS AND FACILITIES, AS AMENDED BY THE STATE OF CONNECTICUT 2018 AMENDMENTS.

ANSI - AMERICAN NATIONAL STANDARDS INSTITUTE

ASTM - AMERICAN SOCIETY FOR TESTING AND MATERIALS

OSHA - OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION U.L. - UNDERWRITERS LABORATORIES

EPA - ENVIRONMENTAL PROTECTION AGENCY

COMPLY WITH REQUIREMENTS OF LOCAL AUTHORITY HAVING JURISDICTION

THE MECHANICAL CONTRACTOR SHALL FURNISH STATUTORY COMPENSATION INSURANCE CERTIFICATES FOR PERSONAL AND PROPERTY DAMAGE DISABILITY/LIABILITY AS REQUIRED BY THE OWNER AND/OR AS HEREINBEFORE DESCRIBED.

GUARANTEE AND SERVICE THE CONTRACTOR SHALL GUARANTEE ALL MATERIALS AND WORKMANSHIP FOR A PERIOD OF ONE YEAR FROM THE DATE OF ACCEPTANCE OF THE

INSTALLATION. IN ADDITION, THE CONTRACTOR SHALL PROVIDE, FREE OF CHARGE, ONE YEAR'S MAINTENANCE GUARANTEE ON MAINTAINED SERVICE AND ADJUSTMENT OF ALL FOLIPMENT IN THIS CONTRACT

ALL COMPRESSORS TO HAVE (5) FIVE YEAR EXTENDED WARRANTEES.

DRAWINGS AND INTENT DRAWINGS ARE INTENDED AS WORKING DRAWINGS FOR GENERAL LAYOUT OF THE VARIOUS HVAC SYSTEMS. HOWEVER, LAYOUT OF EQUIPMENT, ACCESSORIES, SPECIALTIES, DUCTWORK, AND PIPING SYSTEMS ARE DIAGRAMMATIC UNLESS SPECIFICALLY DIMENSIONED, AND DO NOT NECESSARILY INDICATE EVERY REQUIRED PIPE, VALVE, FITTINGS, TRAP, ELBOW, TRANSITION, OFFSETS, OR SIMILAR ITEMS REQUIRED FOR A COMPLETE INSTALLATION.

ALL EXISTING CONDITIONS ARE NOT INDICATED ON THE DOCUMENTS AND THOSE SHOWN ARE APPROXIMATIONS. THE CONTRACTOR IS TO VERIEY, IN THE FIELD, ALL EXISTING CONDITIONS.

EXAMINATION OF PREMISES - SPECIAL NOTE: NO CONSIDERATION OR ALLOWANCE WILL BE GRANTED FOR FAILURE TO VISIT SITE, OR ANY ALLEGED MISUNDERSTANDING OF MATERIAL TO BE FURNISHED, OR WORK TO BE DONE; IT BEING THAT TENDER OF PROPOSAL INDICATED WITH ITS AGREEMENT TO ITEMS AND CONDITIONS REFERRED TO HEREIN OR INDICATED ON AFOREMENTIONED DRAWINGS.

ALL MEASUREMENTS TAKEN AT THE BUILDING SHALL TAKE PRECEDENCE OVER SCALE DIMENSIONS. EVERY PART OF THE PLANS SHALL BE FITTED TO THE ACTUAL CONDITIONS AT THE BUILDING. IF IN CONFLICT WITH SCALE DIMENSIONS, CONTACT ARCHITECT FOR CLARIFICATION. TEMPORARY SERVICES

THE HVAC CONTRACTOR IS TO COORDINATE WITH THE GENERAL CONTRACTOR, PRIOR TO PERFORMING WORK REQUIRING INTERRUPTION OF EXISTING SERVICES, THE CONTRACTOR SHALL SECURE FROM THE OWNER, APPROVAL OF THE PROPOSED OPERATION.

WORK SHALL BE ARRANGED FOR CONTINUOUS PERFORMANCE WHENEVER POSSIBLE. THE MECHANICAL CONTRACTOR SHALL PROVIDE TEMPORARY SERVICES AND/OR CONNECTIONS WHERE REQUIRED AND/OR SCHEDULE AND PERFORM OVERTIME WORK FOR ANY OPERATION WHICH REQUIRED SHUTDOWN OF THE FACILITIES AT NO ADDITIONAL COST TO THE OWNER

THE AREA OF CONSTRUCTION AND/OR ADJACENT SPACES MAY BE OCCUPIED DURING THE CONSTRUCTION PERIOD. THE CONTRACTOR IS TO TAKE ALL NECESSARY MEASURES AND PROVIDE ALL MATERIALS TO ENSURE A SAFE ENVIRONMENT FOR THE FACILITY'S OCCUPANTS.

CONTINUITY OF EXISTING SYSTEMS

WHEREVER AN EXISTING SYSTEM IS REMOVED, PARTIALLY REMOVED, OR MODIFIED THE REMAINING SYSTEM IS TO FUNCTION FULLY AS BEFORE. MAINTAIN CONTINUITY OF THE EXISTING AIR SYSTEMS, HYDRONIC SYSTEMS, AND CONTROL SYSTEMS TO THE AREAS NOT AFFECTED BY THIS ALTERATION. SCAFFOLDING, RIGGING AND HOISTING

UNLESS OTHERWISE SPECIFIED, CONTRACTOR SHALL FURNISH ALL SCAFFOLDING, RIGGING, HOISTING AND SERVICES NECESSARY FOR ERECTION AND DELIVERY INTO THE PREMISES OF ANY EQUIPMENT AND APPARATUS FURNISHED

THE CONTRACTOR SHALL REMOVE SAME FROM PREMISES WHEN NO LONGER REQUIRED.

THIS CONTRACTOR SHALL BE RESPONSIBLE FOR KEEPING STOCK OF MATERIALS AND EQUIPMENT STORED ON PREMISES, AT LOCATIONS DESIGNATED FOR

THIS CONTRACTOR SHALL AT ALL TIMES, KEEP THE PREMISES FREE FROM ACCUMULATION OF WASTE MATERIAL OR RUBBISH CAUSED BY HIS EMPLOYEES AT WORK. HE SHALL REMOVE HIS RUBBISH AND SURPLUS MATERIALS FROM THE JOB SITE AT THE END OF EACH WORK DAY AND SHALL LEAVE THE PREMISES AND HIS WORK IN A CLEAN AND ORDERLY CONDITION.

ALL MATERIAL SCHEDULED FOR REMOVAL IS TO BE DISPOSED OF IN A MANNER MEETING ALL FEDERAL, STATE, AND LOCAL REGULATIONS.

# PROTECTION OF MATERIALS AND EQUIPMENTS

CLOSE PIPE OPENINGS WITH CAPS OR PLUGS DURING INSTALLATION

PROVIDE TEMPORARY CLOSURES ON OPEN ENDED DUCTS DURING CONSTRUCTION PERIOD.

TIGHTLY COVER AND PROTECT FIXTURES AND EQUIPMENT AGAINST DIRT, WATER AND CHEMICAL OR MECHANICAL INJURY. AT COMPLETION OF ALL WORK, FIXTURES, EXPOSED MATERIALS AND EQUIPMENT SHALL BE THOROUGHLY CLEANED.

WORK NOT INCLUDED

ALL ELECTRICAL WORK

CUTTING AND PATCHING LINTELS AND STRUCTURAL FRAMING ALL CONCRETE WORK

THIS CONTRACTOR SHALL FURNISH THE GENERAL CONTRACTOR WITH THE SIZES AND LOCATIONS OF CHASES AND OPENINGS WHICH OCCUR IN WALLS

GENERAL CONTRACTOR, EXCEPT CUTTING REQUIRED FOR THE INSTALLATION OF HANGERS. PRIOR TO DELIVERY TO THE JOB SITE, BUT SUFFICIENTLY IN ADVANCE OF REQUIREMENTS NECESSARY TO ALLOW ENGINEER AMPLE TIME FOR REVIEW,

PROJECT NAME AND LOCATION

ARCHITECT AND ENGINEER ITEM IDENTIFICATION APPROVAL STAMP OF PRIME CONTRACTOR

ALL DUCTWORK SHOP DRAWINGS AND COORDINATION DRAWINGS SHALL BE SUBMITTED ON 3/8 IN SCALE DRAWINGS AND SHALL INCLUDE LOCATIONS AND SIZES OF EXISTING EQUIPMENT ALONG WITH NEW WORK. DRAWINGS SHALL INDICATE LOCATIONS OF HANGERS, SUPPORTS, EXPANSION JOINTS, GUIDES, ANCHORS AND ANCHOR LOADS.

COORDINATION DRAWINGS SHALL INDICATE ALL MEP EQUIPMENT, DUCTS AND PIPES AND PERTINENT ARCHITECTURAL ITEMS. MOUNTING HEIGHTS SHALL BE

SUBMIT SHOP DRAWINGS FOR THE FOLLOWING:

DUCTWORK LAYOUT, SHEET METAL DETAILS/STANDARDS COORDINATION DRAWINGS

CONTRACTOR SHALL SUBMIT FOR APPROVAL, FIVE (5) COPIES OF EACH SHOP DRAWING.

PRIOR TO DELIVERY TO THE JOB SITE, BUT SUFFICIENTLY IN ADVANCE OF REQUIREMENTS NECESSARY TO ALLOW ENGINEER AMPLE TIME FOR REVIEW, CONTRACTOR SHALL SUBMIT FOR APPROVAL, FIVE (5) COPIES OF EACH SHOP DRAWING. INDICATE ON EACH SUBMISSION:

PROJECT NAME AND LOCATION ARCHITECT AND ENGINEER

ITEM IDENTIFICATION APPROVAL STAMP OF PRIME CONTRACTOR

SUBMIT SUBMITTALS ON THE FOLLOWING:

PIPING MATERIALS PIPING SPECIALTIES

PIPING INSULATIONS DUCT MATERIALS DUCTWORK SPECIALTIE DUCTWORK INSULATORS AIR OUTLETS (RGD)

HEATING EOUIPMENT AIR CONDITIONING EQUIPMENT 1. CONTROLS

2. HYDRONIC SYSTEMS BALANCING REPORTS 13. AIR SYSTEMS BALANCING REPORTS

**EQUIPMENT DEVIATION** 

THE PLANS AND/OR SPECIFICATIONS INDICATE THE NAME, MODEL NUMBER OR TYPE OF EQUIPMENT OR MATERIALS SPECIFIED TO SET THE STANDARD OF THE EOUIPMENT FOR THE PROJECT. THE ENGINEER WILL ENTERTAIN THE USE OF OTHER MANUFACTURER'S EQUIPMENT OF LIKE FUNCTIONS AND EQUAL QUALITY. FINAL ACCEPTANCE OF SUBSTITUTES IS AT THE ENGINEER'S DISCRETION. SHOULD THE BIDDER DESIRE TO USE EQUIPMENT OR MATERIALS OR A MANUFACTURER OTHER THAN THOSE SPECIFIED OR SHOWN, HE SHALL ATTACH A RIDER TO THE BID FORM LISTING THE DEDUCTIONS AND/OR ADDITIONS TO HIS BASE BID, TOGETHER WITH THE MANUFACTURE'S NAME AND MODEL NUMBERS OF THE EQUIPMENT OR MATERIALS HE PROPOSED TO FURNISH AS SUBSTITUTES'. IF NO SUBSTITUTE INFORMATION IS FURNISHED, IT WILL BE EXPRESSLY UNDERSTOOD THAT ALL EQUIPMENT AND MATERIALS NAMED WILL BE FURNISHED IN FULL ACCORDANCE WITH THE PLANS AND/OR SPECIFICATIONS.

RECORD DRAWINGS CONTRACTOR SHALL KEEP ACCURATE RECORD OF ALL DEVIATIONS IN WORK AS ACTUALLY INSTALLED FROM WORK INDICATED PAYING PARTICULAR

ATTENTION TO DIMENSIONING OUTSIDE UNDERGROUND UTILITY LINES. THEIR OFFSETS AND VALVES.

OWNER'S INSTRUCTIONS AND SYSTEM OPERATION

THE CONTRACTOR IS TO INSTRUCT THE OWNER, OR HIS REPRESENTATIVE. ON THE OPERATION AND MAINTENANCE PROCEDURES FOR ALL OF THE INSTALLED SYSTEMS AND EQUIPMENT. IN ADDITION TO THE VERBAL INSTRUCTIONS, THESE INSTRUCTIONS SHALL BE WRITTEN IN LAYMAN'S LANGUAGE AND SHALL BE INSERTED IN VINYL-COVERED THREE-RING LOOSE LEAF BINDER. THIS INFORMATION IN BINDER SHALL BE FIRST SENT TO AND APPROVED BY THE ARCHITECT/ENGINEER BEFORE TURNING OVER TO OWNER.

**INSTALLATIONS** 

**SLEEVES** PROVIDE NO. 22 GA. GALVANIZED IRON SLEEVES EXTENDED THROUGH CONSTRUCTION AT ALL PENETRATIONS THROUGH CEILINGS, WALLS AND PARTITIONS FOR INSULATED PIPING THE SLEEVE IS TO BE SIZED TO ALLOW INSULATION TO PASS THROUGH SLEEVE, PROVIDE 1/2 INCH SPACE BETWEEN PIPE AND/OR

FIRE SEAL ALL SLEEVES IN ACCORDANCE WITH BUILDING CODE AND APPLICABLE SECTIONS OF THE NEPA

EXPANSION ANCHORS

PROVIDE CLEVIS HANGERS

SUSPEND HANGERS FROM EXPANSION ANCHORS IN SOLID CONCRETE SLABS SIMILAR TO HILTI HDI. PROVIDE HANGER IN PLACE WITH DOUBLE NUTS. PROVIDE PROTECTION SHIELDS IN INSULATED PIPING, INSTALL HANGERS OVER INSULATION AND SHIELDS.

WHERE OVERHEAD CONSTRUCTION DOES NOT PERMIT FASTENING HANGER RODS IN REQUIRED LOCATIONS, PROVIDE ADDITIONAL STEEL FRAMING AS REQUIRED AND REVIEWED HANGERS AND SUPPORTING

PIPE HANGING AND SUPPORTING - PIPING SHALL NOT BE SUPPORTED BY OTHER PIPING, BUT SHALL BE SUPPORTED WITH PIPE HANGERS SUITABLE FOR THE SIZE OF PIPE AND PROPER STRENGTH AND QUALITY AT PROPER INTERVALS SO THAT THE PIPING CANNOT BE MOVED ACCIDENTALLY FROM THE INSTALLED POSITION AS FOLLOWS:

(UNLESS OTHERWISE NOTED)

1/2 INCH PIPE OR TUBING 3/4 INCH OR 1 INCH PIPE OR TUBING 1-1/4 INCH OR LARGER (HORIZONTAL)

1-1/4 INCH OR LARGER (VERTICAL)

8 FFFT 10 FEET EVERY FLOOR LEVEL

AT CENTER OF CENTER SPACING

DUCT HANGING AND SUPPORTING - DUCTWORK SHALL NOT BE SUPPORTED BY OTHER DUCTWORK OR PIPING, BUT SHALL BE SUPPORTED WITH HANGERS OF TYPE AND AT SPACING AS PER SMACNA STANDARDS

VIBRATION AND SEISMIC CONTROL QUIET OPERATION - ALL WORK SHALL OPERATE UNDER ALL CONDITIONS OF LOAD WITHOUT ANY SOUND OR VIBRATION WHICH IS OBJECTIONABLE IN THE PINION OF THE ENGINEER. IN CASE OF MOVING MACHINERY, SOUND OR VIBRATION NOTICEABLE OUTSIDE OF ROOM IN WHICH IT IS INSTALLED, OR ANNOYING INSIDE ITS OWN ROOM, WILL BE CONSIDERED OBJECTIONABLE BY THE ENGINEER AND SHALL BE REMEDIED IN APPROVED MANNER BY THE

PROVIDE FLEXIBLE PIPE CONNECTIONS AT ALL PIPING CONNECTED TO MOVING EQUIPMENT.

PROVIDE FLEXIBLE DUCT CONNECTIONS AT ALL DUCTWORK CONNECTED TO MOVING EQUIPMENT, FLEXIBLE CONNECTIONS SHALL BE 29 OZ, NEOPRENE COATED FIBERGLASS, 6" WIDE, BURNING PROPERTIES SHALL CONFORM TO NFPA 90A, FASTEN TO DUCTWORK PER MANUFACTURER'S RECOMMENDATIONS FABRIC SHALL NOT BE STRESSED OTHER THAN BY AIR PRESSURE. ALLOW AT LEAST ONE INCH SLACK TO INSURE THAT NO VIBRATION IS TRANSMITTED.

PROVIDE VIBRATION ISOLATION SPRINGS OR PADS AT MOUNTING AND SUPPORTS FOR ALL EQUIPMENT CAPABLE OF TRANSMITTING VIBRATIONS.

SEISMIC RESTRAINTS DESIGNED AND CONSTRUCTED FOR LATERAL FORCES IN ANY DIRECTION SHALL BE PROVIDED FOR ALL MECHANICAL EQUIPMENT IN

ACCORDANCE WITH THE STATE BUILDING CODE. SEISMIC RESTRAINTS SHALL NOT BE REQUIRED FOR THE FOLLOWING:

PIPING IN BOILER AND MECHANICAL ROOMS LESS THAN 1-1/4 INCH INSIDE DIAMETER. LL OTHER PIPING LESS THAN 2-1/2 INCH INSIDE DIAMETER.

RECTANGULAR AIR-HANDLING DUCTS LESS THAN 6 SQUARE FEET IN CROSS-SECTIONAL AREA

ROUND AIR-HANDLING DUCTS LESS THAN 28 INCHES IN DIAMETER. PIPING SUSPENDED BY INDIVIDUAL HANGERS 12 INCHES OR LESS IN LENGTH FROM THE TOP OF THE PIPE TO THE BOTTOM OF THE SUPPORT FOR THE

DUCTS SUSPENDED BY HANGERS 12 INCHES OR LESS IN LENGTH FROM THE TOP OF THE DUCT TO THE BOTTOM OF THE SUPPORT FOR THE HANGER. SEISMIC RESTRAINT FOR DUCTWORK: PROVIDE REQUIRED BRACING MATERIAL, DUCTWORK SHALL BE SUPPORTED AND BRACED TO RESIST ALL DIRECTIONAL (TRANSVERSE, LONGITUDINAL AND VERTICAL) FORCES EQUAL TO 10 PERCENT OF THE WEIGHT OF THE DUCT SYSTEM

**IDENTIFICATION** 

ALL IDENTIFICATION LABELING IS TO COMPLY WITH ASME A13.1

ALL PIPING IS TO BE LABELED WITH INDICATIONS OF SERVICE AND DIRECTION OF FLOW.

ALL DUCTWORK IS TO BE LABELED WITH INDICATIONS OF SERVICE, DIRECTION OF FLOW AND ASSOCIATED SYSTEM DESIGNATION. ALL EQUIPMENT IS TO HAVE PERMANENT LABELS INDICATING EQUIPMENT DESIGNATION

PIPING INSTALLATION

SIZES AND APPROXIMATE LOCATION OF PIPING SYSTEMS ARE SHOWN ON THE DRAWINGS. CHECK CAREFULLY WITHTHE ARCHITECTURAL DRAWINGS, DRAWINGS SHOWING WORK OF OTHER TRADES. AND EXISTING FIFI D CONDITIONS TO MAKE SURE THAT THERE WILL BE NO CONFLICT BETWEEN THESE TRADES AND THE PIPING SYSTEMS. PIPES SHALL BE OFFSET AS REQUIRED TO CLEAR STRUCTURAL MEMBERS AND EXISTING FIELD CONDITIONS.

PIPING TO BE INSTALLED WITH PROPER PITCH TO LOW POINTS. PROVIDE DRAIN VALVES AT ALL LOW POINTS AND AIR VENTS AT ALL HIGH POINTS OF THE INSTALL PIPING TO ALLOW FOR PIPE EXPANSION.

**DUCT INSTALLATION** 

SIZES AND APPROXIMATE LOCATION OF ALL DUCTS ARE SHOWN ON THE DRAWINGS. CHECK CAREFULLY WITH THE ARCHITECTURAL DRAWINGS, DRAWINGS SHOWING WORK OF OTHER TRADES, AND EXISTING FIELD CONDITIONS TO MAKE SURE THAT THERE WILL BE NO CONFLICT BETWEEN THESE TRADES AND TH DUCTS. DUCTS SHALL BE OFFSET AS REQUIRED TO CLEAR STRUCTURAL MEMBERS AND EXISTING FIELD CONDITIONS; IF NECESSARY, THE DIMENSIONS OF THE DUCT MAY BE ALTERED PROVIDED THE CROSS-SECTIONAL AREA IS IN NO CASE REDUCED.

FIELD QUALITY CONTROL PARTITIONS, FLOORS, ROOFS, ETC., REQUIRED FOR THE INSTALLATION OF THE WORK CALLED FOR UNDER THIS CONTRACT. THIS WORK WILL BE DONE BY THE PERFORM THE FOLLOWING FIELD TESTS AND INSPECTIONS ACCORDING TO SMACNA'S "HVAC AIR DUCT LEAKAGE TEST MANUAL" AND PREPARE TEST REPORTS: DISASSEMBLE, REASSEMBLE AND SEAL SEGMENTS OF SYSTEMS TO ACCOMMODATE LEAKAGE TESTING AND FOR COMPLIANCE WITH TEST REQUIREMENTS.

> CONDUCT TESTS AT STATIC PRESSURES EQUAL TO MAXIMUM DESIGN PRESSURE OF SYSTEM OR SECTION BEING TESTED. IF PRESSURE CLASSES ARE NOT INDICATED, TEST ENTIRE SYSTEM AT MAXIMUM SYSTEM DESIGN PRESSURE. DO NOT PRESSURIZE SYSTEMS ABOVE MAXIMUM DESIGN OPERATING PRESSURE. GIVE SEVEN DAYS ADVANCE NOTICE FOR TESTING.

> MAXIMUM ALLOWABLE LEAKAGE: COMPLY WITH REQUIREMENTS FOR LEAKAGE CLASS 3 FOR ROUND AND FLAT-OVAL DUCTS, LEAKAGE CLASS 12 FOR RECTANGULAR DUCTS IN PRESSURE CLASSES LOWER THAN AND EQUAL TO 2-INCH WG (500 PA) (BOTH POSITIVE AND NEGATIVE PRESSURES), AND LEAKAGE CLASS 6 FOR PRESSURE CLASSES FROM 2- TO 10- WG (500 TO 2500 PA).

REMAKE LEAKING JOINTS AND RETEST UNTIL LEAKAGE IS EQUAL TO OR LESS THAN MAXIMUM ALLOWABLE.

DISSIMILAR METALS WHENEVER DISSIMILAR PIPING MATERIALS ARE CONNECTED THE TWO SHALL BE SEPARATED WITH AN 'INSULATION' CONNECTION (DIELECTRIC) FITTING.

STEAM & CONDENSATE RETURN PIPING

STANDARD FORGED STEEL WITH CHAMFERED ENDS. ALL BRANCHES SHALL BE WELDED WITH EITHER WELDOLETE OR TEES. HOT WATER HEATING PIPING TYPE L COPPER TUBING WITH SWEAT FITTINGS WITH 95-5 SOLDER OR STANDARD WEIGHT, SCHEDULE 40, OPEN HEARTH STEEL, NATIONAL OR EQUAL.

FITTINGS FOR STEEL PIPE SHALL BE AS FOLLOWS: GENERALLY, BUTT WELDING FITTINGS OVER TWO INCHES SHALL BE USED AND EITHER SOCKET-WELD OR

STANDARD WEIGHT, SCHEDULE 40, OPEN HEARTH STEEL, NATIONAL OR EQUAL. FITTINGS FOR STEEL PIPE SHALL BE AS FOLLOWS: GENERALLY, BUTT WELDING

FITTINGS OVER TWO INCHES SHALL BE USED AND EITHER SOCKET-WELD OR SCREWED FOR TWO INCHES AND UNDER. WELDING FITTINGS SHALL BE

SCREWED FOR TWO INCHES AND UNDER. WELDING FITTINGS SHALL BE STANDARD FORGED STEEL WITH CHAMFERED ENDS. ALL BRANCHES SHALL BE WELDED WITH EITHER WELDOLETE OR TEES, OR MATCH EXISTING MATERIALS.

CHILLED WATER PIPING TYPE L COPPER TUBING WITH SWEAT FITTINGS WITH 95-5 SOLDER OR STANDARD WEIGHT, SCHEDULE 40, OPEN HEARTH STEEL, NATIONAL OR EQUAL FITTINGS FOR STEEL PIPE SHALL BE AS FOLLOWS: GENERALLY, BUTT WELDING FITTINGS OVER TWO INCHES SHALL BE USED AND EITHER SOCKET-WELD OR SCREWED FOR TWO INCHES AND UNDER. WELDING FITTINGS SHALL BE STANDARD FORGED STEEL WITH CHAMFERED ENDS. ALL BRANCHES SHALL BE WELDED

WITH EITHER WELDOLETE OR TEES, OR MATCH EXISTING MATERIALS. **CONDENSER WATER PIPING** 

TYPE L COPPER TUBING WITH SWEAT FITTINGS WITH 95-5 SOLDER OR PVC (EXCEPT IF LOCATED IN A SPACE USED AS AN AIR PLENUM) OR MATCH EXISTING

CONDENSATION DRAIN PIPING

REFRIGERANT SUCTION LINE PIPING

REFRIGERANT PIPING TYPE ACR SERVICE COPPER TUBING MEETING ASTM B280: HARD DRAWN (ANY SIZE) OR SOFT DRAWN (1-5/8" ID OR SMALLER), OR AS PER MANUFACTURER'S

RECOMMENDATIONS PIPE INSULATION

THE FOLLOWING PIPING SYSTEMS ARE TO BE INSULATED:

STEAM CONDENSATE RETURN PIPING WITHIN 10'-0" OF THE FLOOR HEATING HOT WATER SUPPLY AND RETURN PIPING CHILLED WATER SUPPLY AND RETURN PIPING CONDENSATION DRAIN PIPING

HOT WATER & STEAM HEATING AND CHILLED WATER PIPING INSULATION

INSULATE WITH RIGID PREFORMED FIBERGLASS WITH AP-T PLUS JACKET, SCHULLER MICRO-LOK OR EQUAL, INSULATION THICKNESS SHALL BE 1" THICK FOR AT THE CLOSE-OUT OF THE PROJECT THE CONTRACTOR IS TO DELIVER TO THE OWNER TWO SETS OF "AS-BUILT" DRAWINGS COPIES OF ALL APPROVED SHOP

BELOW 1 ½" OR SMALLER PIPING, 1-1/2" THICK FOR 2" TO 3" PIPING AND 2" THICK FOR PIPING 4" AND LARGER. PROVIDE ZESTON COVERS ON ALL FITTINGS.

> CONDENSATE DRAIN PIPING INSULATION INSULATE WITH 1/2" THICK HEAVY DENSITY FIBERGLASS 25 ASJ WITH VAPOR BARRIER AND LAP ADHESIVE JACKET. INSULATION ON FITTINGS SHALL BE FIBERGLASS WITH PRE-MOLDED JACKET

REFRIGERANT PIPING INSULATION INSULATE SUCTION LINE AND LIQUID WITH ARMAFLEX INSULATION. MINIMUM INSULATION THICKNESS SHALL BE 1"

TYPE DWV COPPER TUBING WITH DWV SWEAT FITTINGS OR PVC (EXCEPT IF LOCATED IN A SPACE USED AS AN AIR PLENUM)

VALVES AND SPECIALTIES

BALANCING FITTINGS PROVIDE "B & G" CIRCUIT SETTER BALANCING FITTINGS ON ALL WATER SYSTEMS WHENEVER REQUIRED FOR BALANCING OF SYSTEMS.

HOT AND CHILLED WATER VALVES BALL TYPE VALVES TO BE JAMESBURY. CLINCHER. OR APOLLO GATE TYPE VALVES TO BE MILWAUKEE #F-2885M (FLANGED) OS&Y TYPE VALVES TO BE IRON BODY, BRONZE MOUNTED OR (SCREWED), BRONZE, RISING STEM, CHECK VALVES TO BE CRANE/JENKINS VALVES.

**THERMOMETERS** SHALL BE TRERICE UNIVERSAL ANGLE TYPE #L80732, SOLID LIQUID FILLED, 4 1/2" DIAL SIZE. FURNISH WITH SEPARABLE SOCKET WITH 2" EXTENSION NECK.

STEAM SPECIALTIES ALL STEAM TRAPS AND SPECIALTIES TO BE B & G OR SARCO

<u>DUCTWORK</u>

LEAKAGE REQUIREMENTS.

SHEET METAL DUCTWORK ALL DUCTWORK SHALL BE CONSTRUCTED OF #1 QUALITY SHEETS OF GALVANIZED STEEL FREE OF CRACKS OR BLEMISHES. WHEN PITTSBURGING OR SNAP LOCKING A JOINT, THE GALVANIZED STEEL SHALL NOT BE CHIPPED OFF. ALL PARTS OF THE SHEET METAL DUCT SYSTEM SHALL BE OF THE GAGE, CONSTRUCTION, HANGING METHOD, AND INSTALLED IN STRICT ACCORDANCE WITH THE CURRENT EDITION OF THE SMACNA STANDARDS, INCLUDING DUC

FLEXIBLE DUCTS TO BE INSULATED TYPE: UL 181. CLASS 1. 2-PLY VINYL FILM SUPPORTED BY HELICALLY WOUND. SPRING-STEEL WIRE WITH FIBROUS-GLASS INSULATION AND POLYETHYLENE VAPOR BARRIER FILM. THE LENGTH OF FLEXIBLE DUCT IS NOT TO EXCEED 12'-0". FLEXIBLE DUCT MAY ONLY BE USED ON THE

SUPPLY AIR SIDE OF LOW PRESSURE DUCT SYSTEMS. MOISTURE LADEN AIR DUCTWORK

DUCTWORK WHICH CONVEYS AIR WITH A HIGH MOISTURE CONTENT, SUCH AS SHOWER EXHAUST AIR, SHALL BE CONSTRUCTED OF ALUMINUM SHEET

MATERIAL MEETING SMACNA STANDARDS

SOUND (ACOUSTIC) INSULATION

PROVIDE INTERNAL SOUND INSULATION IN ALL DUCTS WITHIN 10'-0" OF THE DISCHARGE OF AN AIR HANDLING UNIT AND WHERE INDICATED ON THE DRAWINGS. THE DUCTWORK SHALL BE LINED WITH JOHNS MANVILLE PERMACOTE LINACOUSTIC. THICKNESS, UNLESS SPECIFIED OTHERWISE, SHALL BE 1". LINER SHALL BE APPLIED TO DUCT IN STRICT ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS AND SMACNA GUIDELINES, LATEST EDITION WHERE

SOUND INSULATION IS INDICATED, DUCTWORK SIZES DENOTED ARE THE INSIDE DIMENSIONS AFTER THE INSULATION HAS BEEN INSTALLED. THERMAL INSULATION

THERMAL INSULATION SCHEDULE

COVER ALL CONCEALED UNLINED SUPPLY AIR AND OUTSIDE AIR DUCTWORK WITH FIBERGLASS DUCT WRAP HAVING A MIN. R-6, EQUAL TO JOHNS MANVILLE R-SERIES MICROLITE WITH F.R.G. VAPOR BARRIER. ALL SUPPLY DUCTS, LOCATED IN ATTIC SHALL BE INSULATED TO MINIMUM R-8. COVER ALL EXPOSED UNLINED SUPPLY AIR AND OUTSIDE AIR DUCTWORK WITH RIGID FIBERGLASS BOARD INSULATION HAVING MIN. R-6. PROVIDE ALL TAPE, MASTICS, SEALANTS, MOUNTING PINS, AND ETC. TO INSTALL INSULATION AS RECOMMENDED BY THE MANUFACTURER.

INSULATE DUCTS IN COMPLIANCE WITH THE INTERNATIONAL ENERGY CONSERVATION CODE. COMMERCIAL DUCTWORK SHALL BE INSULATED TO R-6 WHEN IN

UNCONDITIONED SPACES AND R-8 WHEN LOCATED OUTSIDE THE BUILDING. COMMERCIAL DUCTWORK IN CONDITIONED SPACES DOES NOT REQUIRE

BUILDINGS THERMAL ENVELOPE DOES NOT REQUIRE INSULATION. ALL EXTERIOR DUCTS TO BE INSULATED TO A MINIMUM OR R-8.

INSULATION. RESIDENTIAL DUCTS OUTSIDE THE BUILDING ENVELOPE SHALL BE INSULATED TO A MINIMUM OF R-8. RESIDENTIAL DUCTWORK INSIDE THE

SEAL ALL DUCTWORK IN COMPLIANCE WITH THE INTERNATIONAL ENERGY CONSERVATION CODE.

COMMERCIAL DUCTS, SEAL ALL LONGITUDINAL AND TRANSVERSE JOINTS, SEAMS AND CONNECTIONS. RESIDENTIAL DUCTS, VERIFY DUCT LEAKAGE WITH POST CONSTRUCTION OR ROUGH-IN TEST. RESIDENTIAL DUCT LEAKAGE VERIFICATION NOT REQUIRED IF AIR HANDLER AND ALL DUCTS ARE LOCATED WITHIN "CONDITIONED SPACE."

**DUCT INSULATION - EXTERIOR DUCTWORK** 

EXTERIOR DUCTWORK SHOULD FIRST BE WRAPPED WITH 1-1/2" THICK RIGID FIBERGLASS INSULATION, COVERED WITH #907 MASTIC, WEATHERPROOF MEMBRANE APPLIED AND WRAPPED FOR THE ENTIRE LENGTH, THEN RE-APPLY MASTIC AS FINAL SEALING AGENT.

COMPLY WITH NADCA ARC, INCLUDING ITEMS IDENTIFIED AS "RECOMMENDED," "ADVISED," AND "SUGGESTED." PERFORM ELECTRICAL LOCKOUT AND TAGOUT ACCORDING TO OWNER'S STANDARDS OR AUTHORITIES HAVING JURISDICTION. REMOVE NON-ADHERED SUBSTANCES AND DEPOSITS FROM WITHIN THE HVAC SYSTEM. COMPLETE CLEANING IN ACCORDANCE WITH OWNER-CONTRACTOR AGREED-UPON SCOPE OF WORK. SYSTEMS AND COMPONENTS TO BE CLEANED: ALL AIR-MOVING AND DISTRIBUTION EQUIPMENT. DEBRIS REMOVED FROM THE HVAC SYSTEM SHALL BE DISPOSED OF ACCORDING TO APPLICABLE FEDERAL, STATE, AND LOCAL REQUIREMENTS.

DUCT ACCESSORIES

VOLUME DAMPERS

SINGLE BLADE OR OPPOSED BLADE MULTI-LOUVER TYPE AS DETAILED IN SMACNA STANDARDS. PROVIDE END BEARING FOR ALL DAMPERS. QUADRANT OR OTHER OPERATOR FOR EXTERNALLY INSULATED DUCT SHALL HAVE STAND-OFF MOUNT SO OPERATION IS CLEAR OF THE INSULATION. PROVIDE VOLUME DAMPER IN DUCTWORK AT ALL RUN-OUT DUCT TO EACH CEILING DIFFUSER, AT ALL BRANCH DUCTS AND WHERE INDICATED. SMOKE AND/OR FIRE DAMPERS

PROVIDE SMOKE AND/OR FIRE DAMPERS AS REQUIRED. WHETHER INDICATED OR NOT, AT ALL FIRE AND SMOKE RATED PARTITIONS, REVIEW ARCHITECTURAL PLANS FOR DESIGNATIONS. FIRE DAMPERS SHALL BE RUSKIN IBD 2, VERTICAL OR HORIZONTAL, STYLE B OR STYLE C FOR ROUND DUCTS, OR EQUAL. EACH SHALL BE FURNISHED AND INSTALLED IN ACCORDANCE WITH NFPA 90A LATEST EDITION AND BEAR U.L. LABEL AND SHALL CONFORM TO BULLETIN #UL-555. INSTALL IN ALL RATED WALLS AND CEILINGS AS REQUIRED AND/OR INDICATED ON DRAWINGS.

PROVIDE ACCESS DOORS, SIZED AND LOCATED FOR MAINTENANCE WORK, UPSTREAM WHERE POSSIBLE, FOR EACH DUCT MOUNTED SMOKE DETECTOR AND

EACH FIRE DAMPER OR DEVICE WITHIN THE DUCT THAT REQUIRES SERVICE OR INSPECTION. ACCESS SECTIONS IN INSULATED DUCTS SHALL BE DOUBLE-WALL, INSULATED. REFER TO SMACNA STANDARDS. PROVIDE LOCK TYPE 2 (DOOR LATCH, NOT SASH LOCK). COMMERCIAL APPLICATIONS

PROVIDE MOTORIZED SHUTOFF DAMPERS ON EXHAUST AND OUTDOOR AIR SUPPLY OPENINGS IN COMPLIANCE WITH THE IECC

(THE SPEC WRITER IS TO EDIT THIS SECTIONS TO INCLUDE THE EQUIPMENT PERTAINING TO THE PROJECT)

PROVIDE ALL TEMPERATURE. OPERATION AND SAFETY CONTROLS, LOW VOLTAGE CONTROL WIRING, HARDWARE, SOFTWARE, AND ACCESSORIES NECESSARY TO ACHIEVE A FULLY OPERATIONAL HVAC CONTROL SYSTEM. POWER WIRING SHALL BE PROVIDED BY THE ELECTRICAL CONTRACTOR. PROVIDE A PROGRAMMABLE THERMOSTAT(S) IN COMPLIANCE WITH THE INTERNATIONAL ENERGY CONSERVATION CODE INCLUDING SETBACK (55°F HEAT, 85°

COOL) DEADBAND (5°F COMMERCIAL) AND TIMECLOCK (7 DAY COMMERCIAL) TESTING AND BALANCING

COMPLETELY TEST AND BALANCE HOT AND CHILLED WATER SYSTEMS AND ALL SUPPLY, RETURN AND EXHAUST AIR SYSTEMS AND PROVE THE CAPACITIES OF THE SYSTEM AND THE SYSTEM COMPONENTS. SUBMIT RESULTS TO ENGINEER FOR APPROVAL

UNLESS OTHERWISE NOTED, TEST ALL PIPING HYDROSTATICALLY AT NOT LESS THAN 200 PSIG (# PER SOUARE INCH PRESSURE) FOR TWO HOURS AND ALL DEFECTIVE MATERIAL SHALL BE REPLACED, BEFORE MAKING FINAL APPROVAL, THE SUBCONTRACTOR SHOULD PRODUCE A WRITTEN STATEMENT, SIGNED BY A REPRESENTATIVE OF THE OWNER'S UNDERWRITER, THAT THE WORK HAS BEEN COMPLETED AND TESTED IN ACCORDANCE WITH APPROVED SPECIFICATIONS AND PLANS. UNLESS OTHERWISE NOTED. PERFORM PRESSURE TESTS AND OBTAIN APPROVAL OF TEST RESULTS BEFORE STARTING CLEANING OR CONCEALING OF PIPE UNDER INSULATION OR OTHER FINISH. INSULATION REMOVAL AND REINSTALLATION WHICH IS REQUIRED BECAUSE INSULATION WAS INSTALLED PRIOR TO TESTING SHALL BE DONE BE THE CONTRACTOR AT NO EXTRA COST.

TESTS ARE SATISFACTORY ONLY WHEN JOISTS SHOW NO VISIBLE LEAKS AND TEST PRESSURE REMAINS CONSTANT AFTER CONTINUOUS TEST PERIOD. REPAIR LEAKS, AND REMOVE AND REPLACE DEFECTIVE PIPE, FITTINGS AND JOISTS WITH NEW MATERIAL, UNTIL ACCEPTED BY ARCHITECT AND INSPECTING AUTHORITY. WICKING, CAULKING, COMPOUNDING, PEENING, OR OTHER MAKESHIFT TYPE OF REPAIRS ARE NOT PERMITTED. REPEAT TESTS AFTER REPAIRS UNTIL SYSTEMS ARE PROVEN TIGHT

TESTS SHALL BE MAINTAINED AS LONG AS NECESSARY TO COMPLETELY INSPECT PIPING (MINIMUM 4 HOURS). TEST WATER PIPING BY APPLYING HYDROSTATIC PRESSURE USING PUMP: ENSURE THAT LINES ARE VENTED OF ALL AIR.

HOT WATER SYSTEM RELIEF VALVE SHALL BE REMOVED. SYSTEM PRESSURE GAUGES WITH SCALE RANGES LOWER THAN TEST PRESSURE SHALL BE REMOVED OR ISOLATED. WATER CONTROL VALVES SHALL BE REMOVED.

HOT OR CHILLED WATER PIPE TEST

REFRIGERANT PIPE TEST TEST FOR LEAKS BY FILLING SYSTEM WITH DRY NITROGEN. COMPRESSOR SUCTION AND DISCHARGE VALVES SHALL BE CLOSED, EXPANSION VALVES SHALL BE PLUGGED. USE SEPARATE PUMP OR AVAILABLE GAS CYLINDER PRESSURE TO PRESSURIZE SYSTEM.

MAXIMUM TEST PRESSURE SHALL NOT EXCEED 120% OF FOLLOWING MINIMUM TEST PRESSURE

REFRIGERANT LOW SIDE PIPING

AIR SYSTEMS BALANCING

A. REFRIGERANT HIGH SIDE PIPING: 250 PSIG

FOLLOWING PRECAUTIONS SHALL BE TAKEN DURING PRESSURE TESTS

APPLY SOAPY WATER MIXTURE AND VISUALLY INSPECT EACH PIPE JOINT, VALVE PACKING AND BONNET, FLANGE, SIGHT GLASS, FITTING AND PIECE OF EQUIPMENT FOR LEAKAGE, LIQUID LEAK DETECTOR SHALL NOT BE USED EXCEPT WITH PRIOR WRITTEN APPROVAL FROM ARCHITECT. AFTER PRESSURE TESTS HAVE BEEN COMPLETED AND ACCEPTED, EVACUATE SYSTEMS TO ATMOSPHERE AND PROCEED WITH EVACUATION TESTS.

COMPLETELY TEST AND BALANCE ALL SUPPLY, RETURN AND EXHAUST AIR SYSTEMS AND PROVE THE CAPACITIES OF THE SYSTEM AND THE SYSTEM

REPORT INDICATING THE RESULTS TO ENGINEER FOR APPROVAL.

PROCURE THE SERVICES OF A CERTIFIED BALANCING CO. TO PERFORM THE TESTING AND BALANCING OF THE AIR SYSTEMS.

PROCURE THE SERVICES OF A CERTIFIED BALANCING CO. TO PERFORM THE TESTING AND BALANCING OF THE WATER SYSTEMS. COMPLETELY TEST AND BALANCE ALL SUPPLY AND RETURN PIPING SYSTEMS. BALANCE FLOWS TO DESIGN/SCHEDULED LISTING FOR EACH PIECE OF EQUIPMENT (PUMP, COIL, TERMINAL UNIT, ETC.). INCLUDE SIZE, CV VALUE OF EACH CONTROL VALVE, AND EQUIPMENT SERVED IN THE FINAL BALANCING REPORT. SUBMIT THE REPORT TO THE ENGINEER FOR APPROVAL

COMPONENTS. BALANCE THE GRILLES, REGISTERS, DIFFUSERS AND EQUIPMENT TO OBTAIN THE RESULTS INDICATED ON THE DWGS. SUBMIT A BALANCING

OWNER

PROFESSIONAL SEAL

www.girlsincmeriden.org

New Haven, CT 06511

www.cwarchitectsllc.com

ARCHITECT

203 235 7146

CHRISTOPHER WILLIAMS ARCHITECTS, LLC

MEP ENGINEER

85 Willow Street

203 776 0184

INNOVATIVE ENGINEERING SERVICES, LLC

33 North Plains Industrial Rd Wallingford, CT 06492 203 467 4370 iesllc.biz

**ENVIRONMENTAL CONSULTANT** 

DESIGNED BY: JOHN LUBY

CT ASBESTOS PROIECT DESIGNER LICENSE #19

CT LEAD PLANNER/PROJECT DESIGNER LICENSE #986

ISSUED FOR BIDDING

MARCH 12, 2024

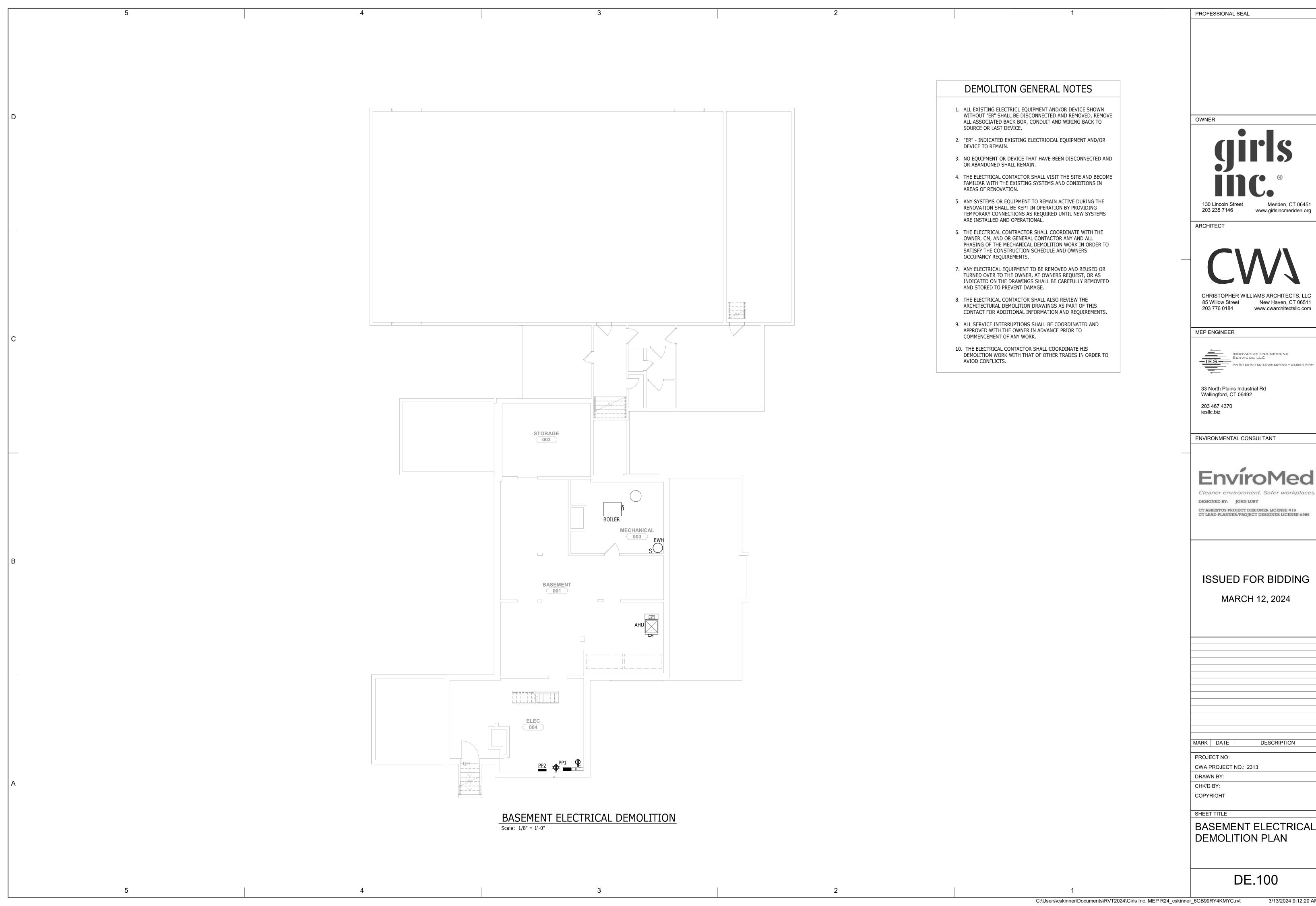
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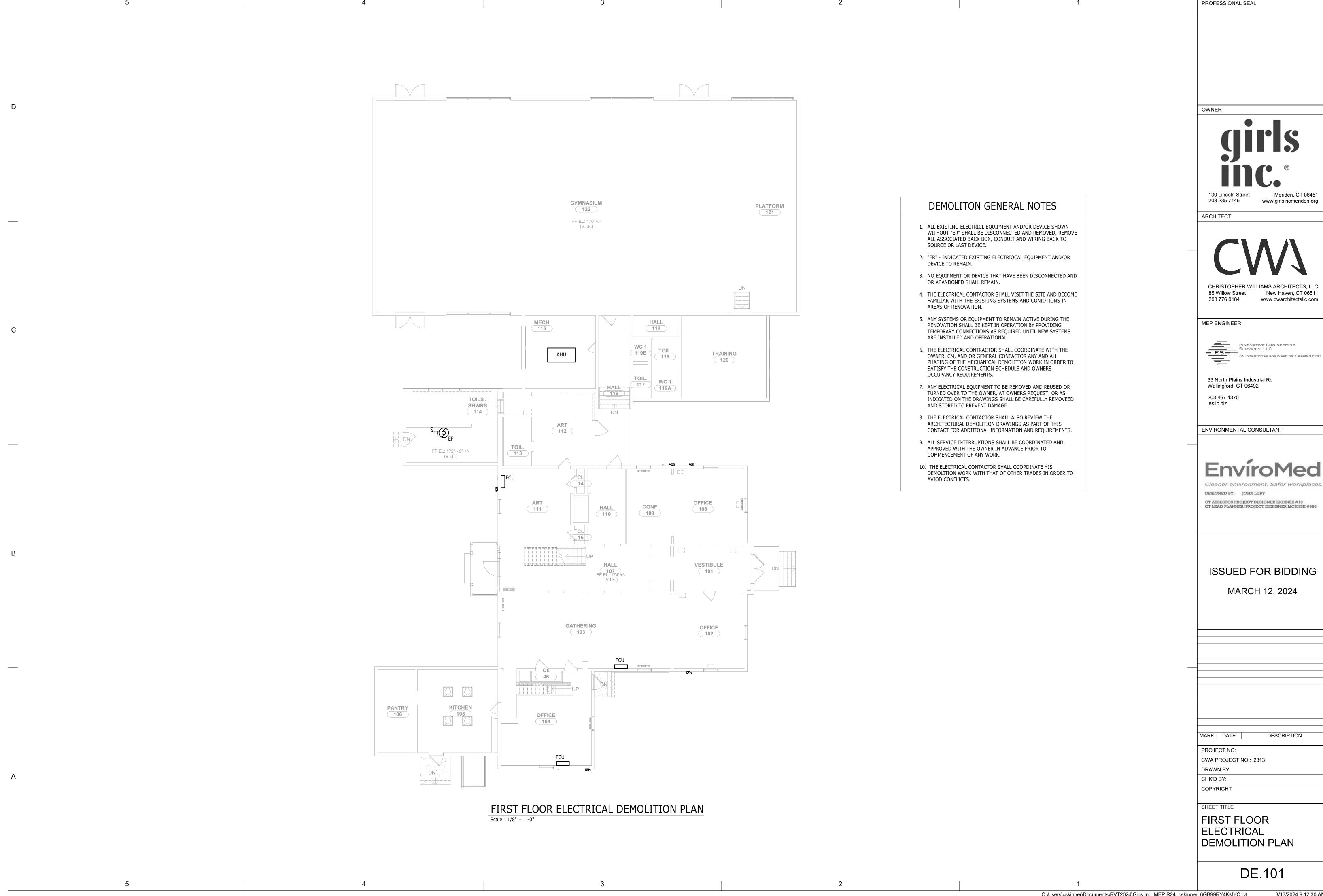
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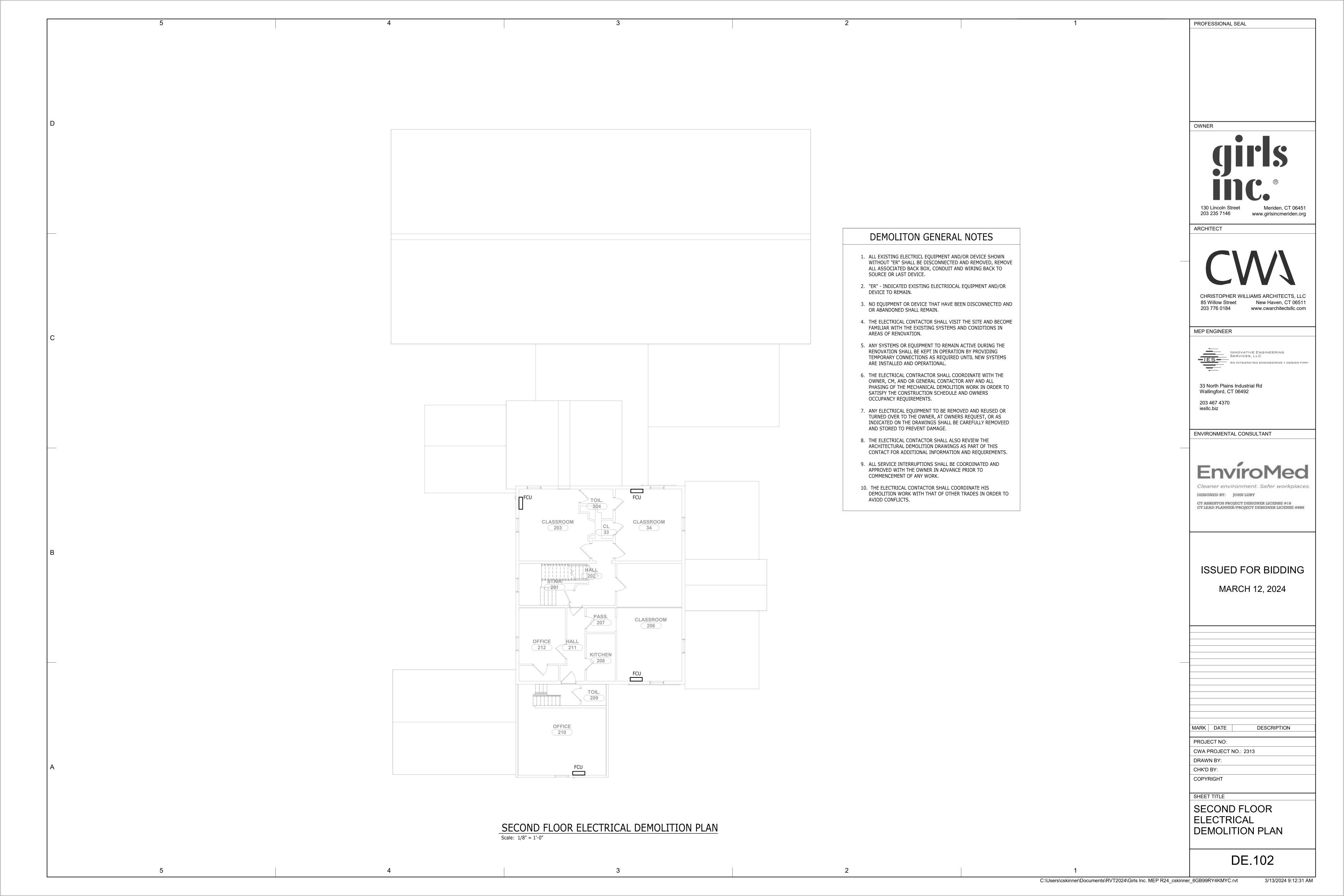




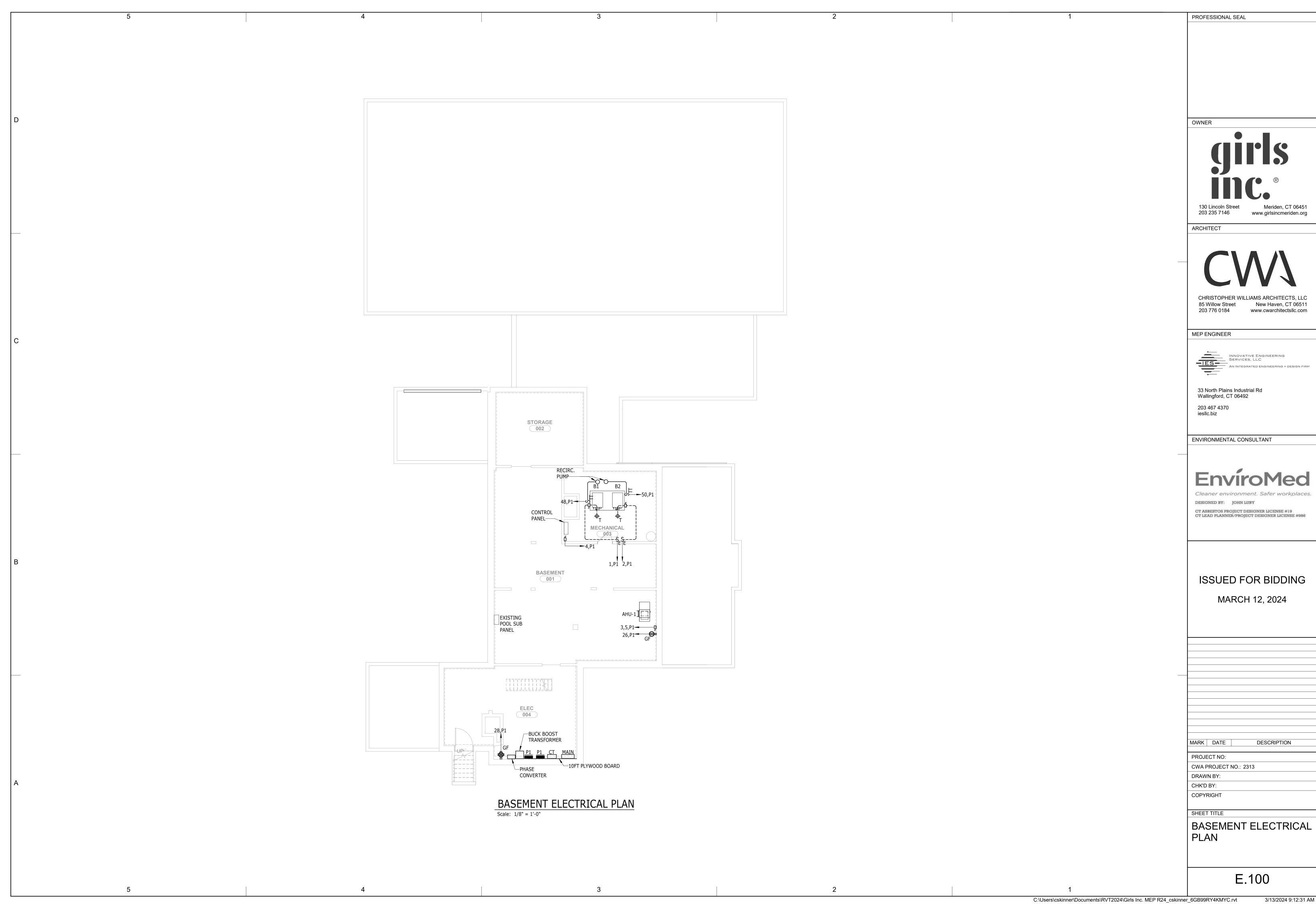
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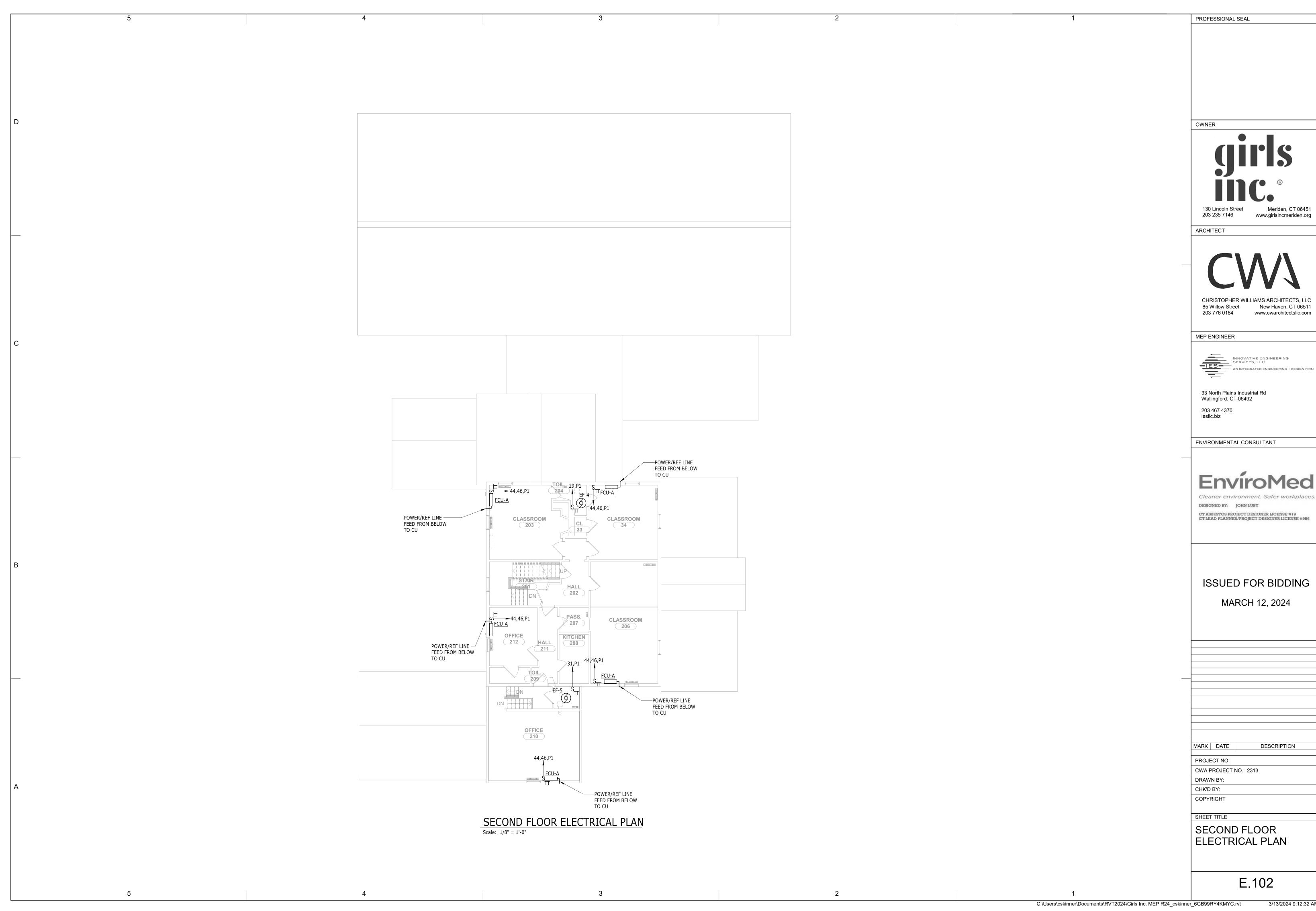


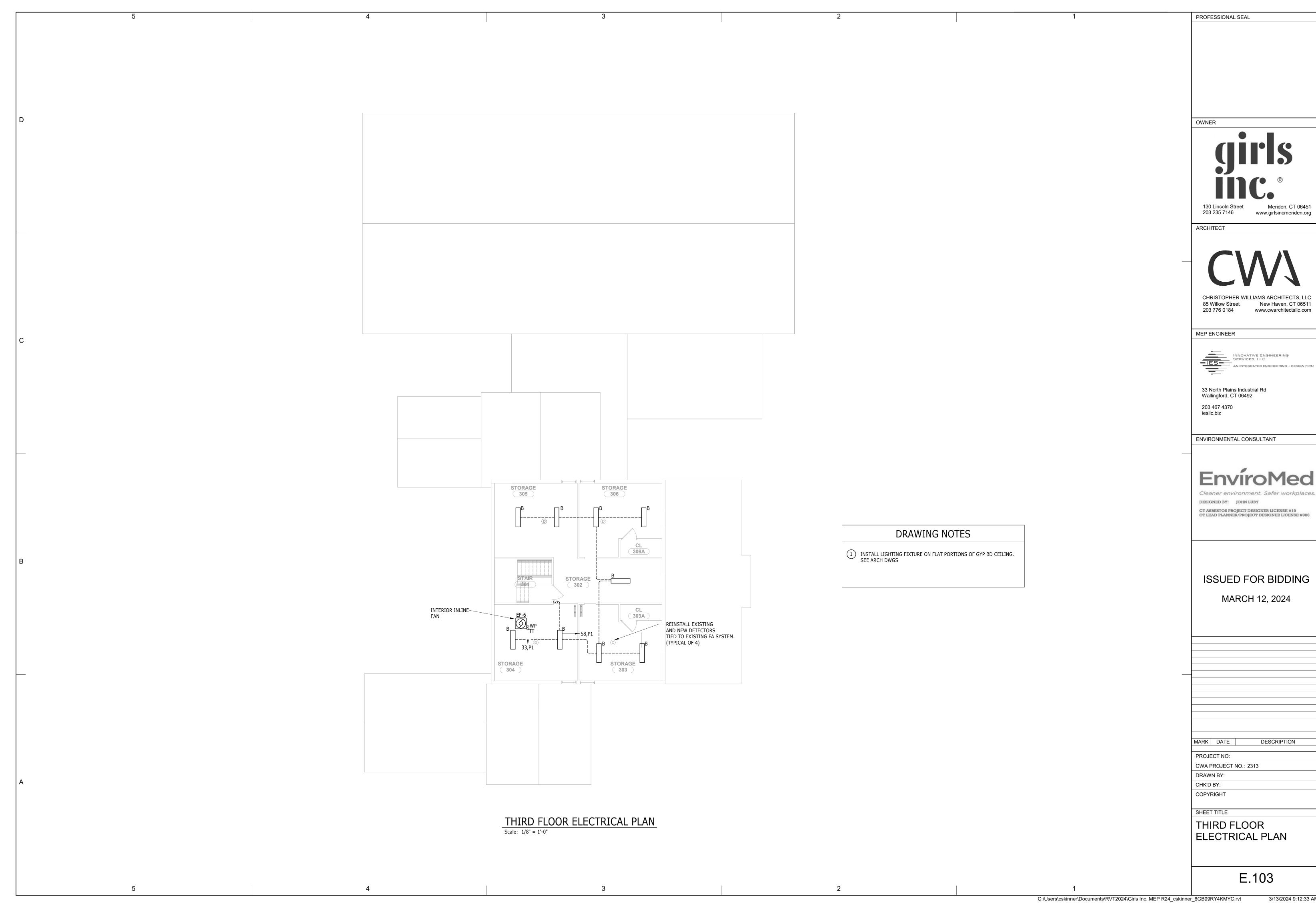


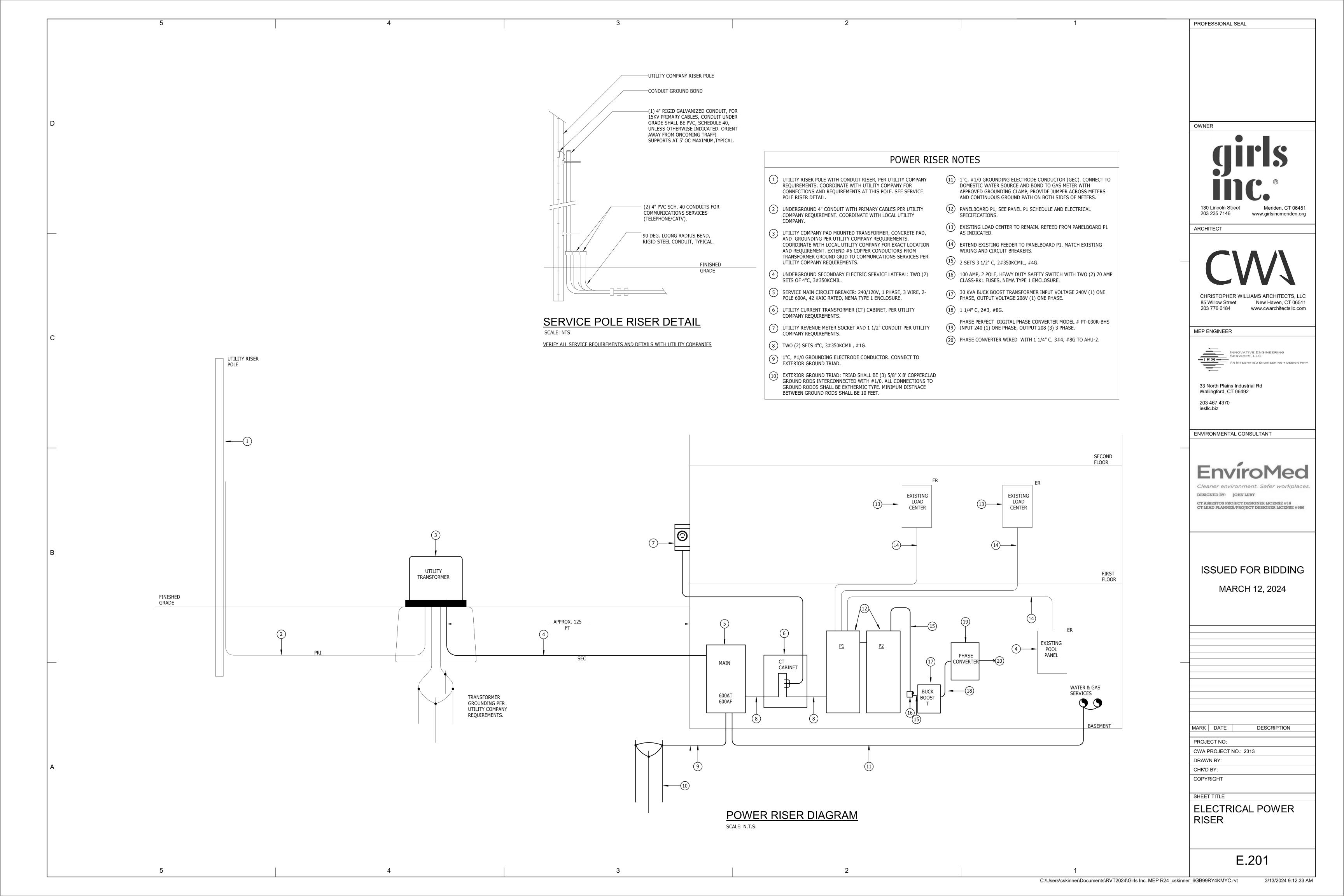












PANEL P1 RATING: 240/120V, 1 PHASE, 3 WIRE SECTION 1 LOCATION: BASEMENT ELECTRICAL ROOM MAIN BUS: ⊠ CU ☐ AL 600A MAIN BUS MOUNTING: ☐ FLUSH ☐ SURFACE MAIN DEVICE: MLO WITH FEED THRU LUGS TRIM: ⊠ SINGLE DOOR ☐ DOOR-IN-DOOR INTERRUPTING RATING: 42KAIC CKT. BKR.

POLES TRIP AMPS CKT. NO. CKT. BKR. NO. TRIP POLES WIRE & CONDUIT WIRE & CONDUIT DESCRIPTION KVA DESCRIPTION A B 0.9 1 20 1 BOILER B-1 3/4"C, 2#12, #12G 0.9 3/4"C, 2#12, #12G BOILER B-2 1 20 2 1.4 0.4 -1 20 4 3 20 2 AHU-1 3/4"C, 2#12, #12G 1.0 CONTROL PANEL 2 20 6 5 20 1 SPARE 0.0 1.7 3/4"C, 2#10, #10G CU-4 - - 8 7 50 2 AHU-2 7.0 1.7 -1 1/4"C, 2#3, #8G 2 20 10 9 - - -7.0 <sup>8.7</sup> | 1.7 | 3/4"C, 2#10, #10G CU-2 - - 12 1.7 | 11 | 20 | 2 | CU-1 3/4"C, 2#10, #10G 13 - - -2 20 14 - - 16 1.7 CU-5 1.7 3/4"C, 2#10, #10G 15 20 2 CU-3 3/4"C, 2#10, #10G 1.7 CU-6 2 20 18 - - 20 1.7 3/4"C, 2#10, #10G | 17 | - | - | -1.7 1.7 | 19 | 20 | 2 | CU-7 3/4"C, 2#10, #10G 3.4 1.7 3/4"C, 2#10, #10G 21 - - -1.7 CU-8 2 20 22 - - 24 23 20 1 EXH. FAN EF-1 3/4"C, 2#12, #12G 0.2 1.7 -25 | 20 | 1 | EXH. FAN EF-2 3/4"C, 2#12, #12G 0.2 1 20 26 0.1 3/4"C, 2#12, #12G RECEPTACLE - BASEMENT 27 20 1 EXH. FAN EF-3 3/4"C, 2#12, #12G 0.1 <sup>0.4</sup> 0.3 3/4"C, 2#12, #12G RECEPTACLE - BASEMENT 1 20 28 29 20 1 EXH. FAN EF-4 3/4"C, 2#12, #12G 0.1 0.1 3/4"C, 2#12, #12G RECEPTACLE - EXTERIOR 1 20 30 0.1 2 70 32 31 20 1 EXH. FAN EF-5 3/4"C, 2#12, #12G 6.0 SEE POWER RISER PHASE CONVERTER - - 34 0.1 33 20 1 EXH. FAN EF-6 3/4"C, 2#12, #12G 1 6.0 -2 50 36 - - 38 35 | 100 | 2 | EXISTING PANEL 12.0 EXISTING RANGE MATCH EXISTING FEEDER 1.0 3/4"C, 3#6, #10G 37 - - - -12.0 15.4 5.8 MATCH EXISTING FEEDER EXISTING SUBPANEL 2 60 40 39 100 2 EXISTING PANEL MATCH EXISTING FEEDER 9.6 - - 42 | 41 | - | - | -9.6 5.8 30.8 32.8 TOTALS PER PHASE TOTALS SECTION 1 33.6 7.3 TOTALS SECTION 2 GRAND TOTAL (2-SECT.) 40.9

MA:	IN BUS: IN DEVIC	⊠ CU E: MLO	1 PHASE, 3 WIRE ☐ AL 600A MAIN BUS IG: 42KAIC			PANE SECTI				LOCATION: BASEMENT ELECTRIC MOUNTING: ☐ FLUSH ☒ SU TRIM: ☒ SINGLE DOOR		R-IN-DOC	R
KT.	CKT.	BKR.									CKT.	BKR.	CKT
NO.	TRIP AMPS	POLES	DESCRIPTION	WIRE & CONDUIT	KVA	A	В	KVA	WIRE & CONDUIT	DESCRIPTION	POLES	TRIP AMPS	NO.
43	20	2	FCU'S - 1ST FLOOR	3/4"C, 3#12, #12G	0.1	0.3		0.2	3/4"C, 3#12, #12G	FCU'S - SECOND FLOOR	2	20	44
5	-	-	-	-	0.1		0.3	0.2	-	-	-	-	46
7	20	2	FCU-E 1ST FLOOR	3/4"C, 3#12, #12G	0.1			0.1	3/4"C, 2#12, #12G	RECEPTACLE - RECIRC PUMP	1	20	48
9	-	-	-	-	0.1	0.2		0.1	3/4"C, 2#12, #12G	RECEPTACLE - RECIRC PUMP	1	20	50
1	70	2	PHASE CONVERTER	SEE RISER DIAGRAM	6.0		6.1	0.1	3/4"C, 2#12, #12G	RECEPTACLE - EXTERIOR	1	20	52
3	-	-	-	-	6.0			0.1	3/4"C, 2#12, #12G	RECEPTACLE - EXTERIOR	1	20	54
5	20	1	RECEPTACLE - EXTERIOR	3/4"C, 2#12, #12G	0.1	0.2		0.1	3/4"C, 2#12, #12G	RECEPTACLE - EXTERIOR	1	20	56
7	20	1	LIGHTING - EXTERIOR RAMP	3/4"C, 2#12, #12G	0.2		0.4	0.2	3/4"C, 2#12, #12G	LIGHTING - THIRD FLOOR	1	20	58
9	20	1	SPARE	-	0.0			0.0	-	SPARE	1	20	60
1	20	1	SPARE	-	0.0	0.0		0.0	-	SPARE	1	20	62
3	20	1	SPARE	-	0.0		0.0	0.0	-	SPARE	1	20	64
5	20	1	SPARE	-	0.0			0.0	-	SPARE	1	20	66
7	20	1	SPARE	-	0.0	0.0		0.0	-	SPARE	1	20	68
9	20	1	SPARE	-	0.0		0.0	0.0	-	SPARE	1	20	70
1	20	1	SPARE	-	0.0			0.0	-	SPARE	1	20	72
'3	20	1	SPARE	-	0.0	0.0		0.0	-	SPARE	1	20	74
<b>'</b> 5	20	1	SPARE	-	0.0		0.0	0.0	-	SPARE	1	20	76
'7	20	1	SPARE	-	0.0			0.0	-	SPARE	1	20	78
9	20	1	SPARE	-	0.0	0.0		0.0	-	SPARE	1	20	80
1	20	1	SPARE	-	0.0		0.0	0.0	-	SPARE	1	20	82
33	20	1	SPARE	-	0.0			0.0	-	SPARE	1	20	84
				TOTALS PER PHASE		0.7	6.6						
				GRAND TOTAL	7.3								

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203 235 7146 www.girlsincmeriden.org

ARCHITECT



CHRISTOPHER WILLIAMS ARCHITECTS, LLC 85 Willow Street New Haven, CT 06511 203 776 0184 www.cwarchitectsllc.com

MEP ENGINEER



33 North Plains Industrial Rd Wallingford, CT 06492 203 467 4370 iesllc.biz

ENVIRONMENTAL CONSULTANT



DESIGNED BY: JOHN LUBY

CT ASBESTOS PROJECT DESIGNER LICENSE #19 CT LEAD PLANNER/PROJECT DESIGNER LICENSE #986

ISSUED FOR BIDDING

MARCH 12, 2024

DESCRIPTION MARK DATE PROJECT NO:

CWA PROJECT NO.: 2313 DRAWN BY: CHK'D BY:

SHEET TITLE

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ELECTRICAL SCHEDULES

E.202

**ABBREVIATIONS** ADA AMERICANS WITH DISABILITIES ACT AFF ABOVE FINISHED FLOOR AWG AMERICAN WIRE GAUGE CONDUIT CIRCUIT BREAKER MOUNTED IN CEILING CKT CIRCUIT DISHWASHER DRAWING E/EM EMERGENCY POWER CIRCUIT ER EXISTING TO REMAIN FLOOR GROUND GROUNDING FAULT CIRCUIT INTERRUPTER JUNCTION BOX NOT IN CONTRACT NTS NOT TO SCALE TO BE REMOVEWD AND RELOCATED UON UNLESS OTHERWISE NOTED VOLT WATT

WEATHERPROOF

**ELECTRICAL LEGEND** SYMBOL DESCRIPTION MANUAL MOTOR STARTER WITH THERMAL OVERLOAD PROTECTION EMERGENCY POWER OFF SWITCH: SINGLE POLE TOGGLE SWITCH WITH RED "EMERGENCY OFF" WALL PLATE MANUAL MOTOR STARTER WEITH THERMAL OVERLOAD PROTECTION, 'E' WHERE SPECIFIED INDICATES EMERGENCY POWER OFF WITH RED "EMERGENCY OFF" WALL PLATE. GFCI DUPLEX RECEPTACLE GFCI DUPLEX RECEPTACLE WITH WEATHERPROOF 'WHILE-IN-USE' COVER. DUPLEX RECEPTACLE WITH (2) USB HOSPITAL GRADE: HUBBELL USB8300\_ OR APPROVED EQUAL TAMPER PROOF: HUBBELL USB20X2\_ OR APPROVED EQUAL OUTLET TO SUIT EQUIPMENT (CONTRACTOR TO VERIFY) EXISTING PANELBOARD/LOAD CENTER 120/240V PANEL REVENU METER \_\_\_\_ CONDUIT AND WIRE HOMERUN TO PANELBOARD, NUMBER/LETTERS INDICATE CIRCUIT AND **—** PANELBOARD TERMINATION UNLESS OTHERWISE NOTED ① JUCTION BOX  $\bigcirc$ MOTOR SAFETY DISCONNECT SWITCH FUSIBLE SAFETY DISCONNECT SWITCH THERMAL LINK FOR EMERGENCY BOILER SHUT DOWN SWITCHED WIRE ----

## LIGHT FIXTURE SCHEDULE

LIGHTING FIXTURE TYPE	$\bigcirc$ <sup>A</sup>
	$\cup$
MANUFACTURER	SIGMA
CATALOG NO	SIG23-T-PLED-III-48LED-700MA-30K-
	120-PT23-RAL-9005-T
	TENON MOUNTED, 120V, LED
VOLTAGE	
LAMP & DESIGNATION	
DRIVER MOUNTING	
HOUSING	
LENS/LOUVER	
REMARKS	
В	
LIGHTING ENGINE TYPE	
I I (aH I IN (a FIX I I IRF I YPF I	
<u>LIGHTING FIXTURE TYPE</u> L	
MANUFACTURER	LITHONIA LIGHTING
MANUFACTURER	LBL4-4800LM-80CRI-35K-MIN1-ZT-MVOLT-LSXRHL
MANUFACTURER	LBL4-4800LM-80CRI-35K-MIN1-ZT-MVOLT-LSXRHL
MANUFACTURER CATALOG NO FIXTURE DESCRIPTION VOLTAGE	LBL4-4800LM-80CRI-35K-MIN1-ZT-MVOLT-LSXRHL WRAPAROUND 120
MANUFACTURER CATALOG NO FIXTURE DESCRIPTION VOLTAGE LAMP & DESIGNATION	
MANUFACTURER CATALOG NO FIXTURE DESCRIPTION VOLTAGE LAMP & DESIGNATION DRIVER	LBL4-4800LM-80CRI-35K-MIN1-ZT-MVOLT-LSXRHL
MANUFACTURER CATALOG NO FIXTURE DESCRIPTION VOLTAGE LAMP & DESIGNATION DRIVER MOUNTING	LBL4-4800LM-80CRI-35K-MIN1-ZT-MVOLT-LSXRHL120THIRD FLOORHIGH EFFICIENCYSURFACE
MANUFACTURER CATALOG NO FIXTURE DESCRIPTION VOLTAGE LAMP & DESIGNATION DRIVER MOUNTING HOUSING	LBL4-4800LM-80CRI-35K-MIN1-ZT-MVOLT-LSXRHL120THIRD FLOORHIGH EFFICIENCYSURFACESTEEL
MANUFACTURER CATALOG NO FIXTURE DESCRIPTION VOLTAGE LAMP & DESIGNATION DRIVER MOUNTING HOUSING LENS/LOUVER	LBL4-4800LM-80CRI-35K-MIN1-ZT-MVOLT-LSXRHL120THIRD FLOORHIGH EFFICIENCYSURFACE

## **GENERAL NOTES**

- THE ELECTRICAL CONTRACTOR SHALL BE RESPONSIBLE FOR ALL WORK REQUIRED FOR A COMPLETE, FULLY OPERABLE INSTALLATION. ALL WORK TO BE DONE IN ACCORDANCE WITH THE LATEST APPROVED ISSUE OF THE NFPA 70, NATIONAL ELECTRIC CODE (NEC) AND APPLICABLE LOCAL CODES.
- . PRIOR TO SUBMISSION OF NIDS GIVE WRITTEN NOTICE KTO ARCHITECT AND ENGINEER OF ANY MATERIAL OR APPRATUS THAT IS INADEQUATE, UNSUITABLE FOR THE USE, IN VOLATION OF LAWS, ORDINANCES, RULES, CODE OR ANY REGULATIONS OF AUTHORITIES HAVING JURISDICTION OR ANY NECESSARY ITEMS OF WORK THAT HAS BEEN OMITTED. ONTATOE AFFIRMS THAT ABSENT SUCH NOTICE, ALL SYSTEMS WILL FUNCTION SATIFACTORILY WITHOUT ADDITIONAL EXTRA CCOMPENSION.
- THE ELECTRICAL CONTACTOR SHALL VISIT THE SITE PRIOR TO SUBMITTING A BID AND ADHERE TO CONTENTS OF THE BID DOCUMENTS. ANY DEVIATIONS FROM THE INFORMASTION PROVIDED IN THE DOCUMENTS MUST BE LISTED IN WRITING. INNOVATIVE ENGINEERING SERVICES, LLC HAS THE RIGHT TO BE COMPENSATED FOR REVIEW OF VALUE ENGINEERING OR SUBSTITUTED MATERIALS AND EQUIPMENT.
- 4. ELECTRICAL CONTRACTOR SHALL RESTORE ALL AREAS DISTURBED TO THEIR ORIGINAL CONDITION. ELECTRICAL CONTRACTOR IS RESPONSIBLE FOR ALL CUTTING, PATCHING, PAINTING, CLEAN-UP, ELECTRICAL DEBRIS REMOVAL AND GENERAL COORDINATION OF THE WORK EFFORT AS REQUIRED FOR THE INSTALLATION OF THE ELECTRICAL ITEMS OF WORK.
- 5. THE DRAWINGS SHOW THE GENERAL LAYOUT AND SOME OF THE DETAIL, BUT THEY DO NOT SHOW EVERY FITTING, BEND, ...ETC. ELECTRICAL CONTRACTOR SHALL PROVIDE ALL SUCH MATERIALS TO MAKE A COMPLETE INSTALLATION.
- 6. ALL PART NUMBERS ARE PROVIDED FOR THE CONVENIENCE OF THE CONTRACTOR. THEY ARE NOT TO BE CONSIDERED THE COMPLETE SPECIFICATION OF THE PRODUCT. THE PART NUMBER AND DESCRIPTION WILL BE THE COMPLETE SPECIFICATION. IN THE EVENT OF A DISCREPANCY BETWEEN THE TWO, THE MORE STRINGENT, MORE COSTLY FEATURE/PERFORMANCE WILL BE REQUIRED.
- 7. ELECTRICAL CONTRACTOR SHALL BE RESPONSIBLE FOR TESTING OF ALL PHASES OF THE WORK AND TO DEMONSTRATE TO OWNER THAT THE EQUIPMENT IS IN FULL OPERATING ORDER.
- 8. DO NOT SCALE DRAWINGS; ACTUAL FIELD MEASUREMENTS AND DIMENSIONS TAKE PRECEDENCE IN ALL CASES.
- 9. ALL WORK SHALL BE DONE IN ACCORDANCE WITH THE STANDARD GENERAL CONDITIONS OF THE CONSTRUCTION CONTRACT, AIA DOCUMENT A 201, LATEST EDITION.
- 10. ELECTRICAL CONTRACTOR SHALL INSTALL ALL EQUIPMENT IN ACCORDANCE WITH MANUFACTURERS INSTRUCTIONS AND OR REQUIREMENTS FOR PROPER OPERATION AND MAINTENANCE.
- 11. IN ADDITION TO THE REOUIREMENTS SHOWN FOR LOW VOLTAGE EQUIPMENT AND RACEWAYS, THE ELECTRICIAN SHALL CARRY AN ALLOWANCE FOR FINAL COORDINATION OF ALL RACEWAYS AND SLEEVES REQUIRED TO FACILITATE THE LOW VOLTAGE CONSULTANT WORK.
- 12. ELECTRICAL CONTRACTOR SHALL WARRANT AND GUARANTEE ALL MATERIALS AND WORKMANSHIP FOR A PERIOD OF ONE YEAR FROM THE DATE OF FINAL ACCEPTANCE BY THE OWNER.
- 13. ELECTRICAL CONTRACTOR SHALL GIVE OWNER 10 DAYS ADVANCE NOTICE OF SHUTDOWNS, OR AS DIRECTED BY THE OWNER. SHUTDOWNS TO BE KEPT TO A MINIMUM. AT NO TIME SHALL THE BUILDING/SPACE BE LEFT WITHOUT COMMERCIAL POWER IN FULL OPERATING ORDER.
- 14. PROVIDE INDEPENDENT SEISMIC SUPPORT OF ALL ELECTRICAL EQUIPMENT PER THE LATEST ADOPTED VERSION OF THE INTERNATIONAL BUILDING
- 15. ALL ELECTRICAL PENETRATIONS TO BE FIREPROOFED TO MAINTAIN INTEGRITY OF FIRE WALLS/FLOORS/CEILINGS.
- 16. ALL THE WIRE SIZES ARE BASED ON COPPER, ALUMINUM IS NOT TO BE USED UNLESS NOTED OTHERWISE.
- 17. MINIMUM CONDUCTOR SIZE FOR A FULLY LOADED 20A CIRCUIT, UNLESS OTHERWISE NOTED, SHALL BE #12 FOR ALL BRANCH CIRCUIT RUNS UP TO THE FIRST OUTLET; OVER 60 FEET, #10; OVER 105 FEET, #8; INCREASE CONDUIT SIZE TO SUIT.
- 18. CIRCUIT NUMBERS ARE INDICATED FOR INTENT ONLY. THE ELECTRICAL CONTRACTOR SHALL ADJUST ACCORDINGLY IN THE FIELD, TO BALANCE CIRCUITS EVENLY ON ALL PHASES.
- 19. ALL WIRING METHODS ARE TO BE IN ACCORDANCE WITH THE CURRENT ISSUE OF THE NATIONAL ELECTRICAL CODE, AND APPLICABLE LOCAL CODES. ALL WIRING IS TO BE IN CONDUIT, UNLESS SPECIFICALLY NOTED OTHERWISE. ALL WIRING IS TO BE CONCEALED.
- 20. ELECTRICAL CONTACTOR MUSR COORDINATE LED DRIVER WITH DIMMER SWITCH FOR COMPATIBILITY.
- 21. SHARED NEUTRALS ARE NOT TO BE USED. PROVIDE SEPARATE NEUTRALS FOR ALL CIRCUITS INCLUDING SWITCHES PER THE LATEST EDITION OF THE
- 22. FOR ALL ROOFTOP OR GRADE LEVEL HVAC EQUIPMENT, THE ELECTRICAL CONTRACTOR SHALL SUPPLY A GFCI WP, 20A RECEPTACLE FOR EQUIPMENT SERVICING. ALL DISCONNECT SWITCHES ARE TO BE HEAVY DUTY, FUSED, WEATHER PROOF (WP) DEVICES.
- 23. FOR ALL FLOOR BOXES WITH DATA COMMUNICATIONS SERVICES PROVIDE (2) 3/4" EMPTY CONDUITS TO HUNG CEILING OR OTHER ACCESSIBLE SPACE.
- INSTALL A DRAG WIRE. 24. FOR ALL WALL/CEILING BOXES FOR DATA COMMUNICATIONS PROVIDE 3/4"C EMPTY CONDUITS TO HUNG CEILING OR OTHER ACCESSIBLE SPACE.
- INSTALL A DRAG WIRE.
- 25. RISER DIAGRAMS ARE PROVIDED TO SHOW DIAGRAMMATIC GENERAL WIRING REQUIREMENTS. WIRING IS TO BE PROVIDED FOR THE PARTICULAR VENDOR/SYSTEM APPROVED FOR THE PROJECT, ALL WIRING IS TO BE CONCEALED.
- 26. ALL WIRING IN AIR PLENUM CEILINGS SHALL BE TEFLON COATED AND RATED FOR USE WITHIN THE PLENUM.
- 27. NO LOW VOLTAGE WIRING SHALL BE PERMITTED IN THE SAME RACEWAY AS POWER WIRING.
- 28. EMERGENCY SERVICES SHALL BE RUN IN SEPARATE RACEWAYS FROM ALL OTHER SYSTEMS.
- 29. PROVIDE DRAG LINES IN ALL EMPTY RACEWAYS.
- 30. ELECTRICAL CONTRACTOR SHALL PROVIDE SHOP DRAWINGS FOR APPROVAL FOR ALL LIGHT FIXTURES, PANELS, SWITCHES, RECEPTACLES, POKE THROUGH'S, WIREMOLD, TRANSFORMERS, GENERATOR, ATS, UPS AND SPECIALTY ELECTRICAL SYSTEMS, ETC.
- 31. ELECTRICAL CONTRACTOR TO VERIFY LIGHTING FIXTURE MOUNTING HEIGHT REQUIREMENTS FOR VARIOUS CEILING TYPES AND ORDER APPROPRIATE
- 32. COORDINATE EXACT PLACEMENT OF EQUIPMENT WITH ARCHITECTURAL AND MECHANICAL PLANS, MAKE FIELD ADJUSTMENTS AS REQUIRED TO AVOID CONFLICTS, VERIFY WITH OWNER.
- 33. ELECTRICAL CONTRACTOR TO COORDINATE WITH ARCHITECTURAL AND MECHANICAL CONTRACTOR FOR ITEMS SUPPLIED BY THE MECHANICAL/OTHER DIVISIONS BUT INSTALLED BY THE ELECTRICAL CONTRACTOR. ELECTRICAL CONTRACTOR TO REVIEW ALL THE PLANS FOR THE PROJECT AND ASSIST IN PROVIDING COORDINATION DRAWINGS WITH OTHER TRADES.
- 34. ELECTRICAL CONTRACTOR TO VERIFY LOADS, SETTINGS, OVERCURRENT PROTECTION... ETC TO INSURE COMPATIBILITY OF EQUIPMENT.
- 35. PROVIDE LAMICOID NAMEPLATES AND TYPEWRITTEN PANEL SCHEDULES FOR ALL PANEL BOARDS, DISTRIBUTION AND DISCONNECT EQUIPMENT, MODIFIED OR PROVIDED AS NEW AS PART OF THE SCOPE OF WORK. ALTERNATE LABELING PROVISIONS MUST BE APPROVED BY THE ENGINEER.
- 36. REFER TO ARCHITECTURAL DRAWINGS FOR THE EXACT LOCATION AND MOUNTING HEIGHTS OF ALL DEVICES AND OUTLETS.
- 37. CONTRACTOR TO PROVIDE ALL COORDINATION FOR UTILITY SERVICES INCLUDING TEMPORARY SERVICE FOR THE PROJECT. THIS INCLUDES POWER UTILITY, TELEPHONE COMPANY AND CABLE TV OPERATOR.
- 38. DISCONNECT SWITCHES AND CIRCUIT BREAKER USED AS SWITCHES SHALL BE INSTALLED IN ACCORDANCE WITH ALL LOCAL CODES AND THE LATEST VERSION OF THE NATIONAL ELECTRICAL CODE "NEC" SECTION 110.26 TABLE 110.26(A)(1) AND SECTION 404.8. ALL DISCONNECT SWITCHES AND CIRCUIT BREAKERS SHALL BE LOCATED SO THAT THEY MAY BE OPERATED FROM A READILY ACCESSIBLE PLACE. THEY SHALL BE INSTALLED SUCH THAT THE CENTER OF THE GRIP OF THE OPERATING HANDLE OF THE SWITCH OR CIRCUIT BREAKER, WHEN IN ITS HIGHEST POSITION, IS NOT MORE THAN 6'-7" ABOVE THE FLOOR OR WORKING PLATFORM WITH 36" CLEAR IN FRONT.
- 39. ALL SURFACE RACWAY LOCATED IN FINSH AREAS SHALL BE INSTALLED IN WIREMOLD SURFACE METAL RACEWAY OR APPROVED EQUAL.

PROFESSIONAL SEAL



203 235 7146 www.girlsincmeriden.org

ARCHITECT



CHRISTOPHER WILLIAMS ARCHITECTS, LLC 85 Willow Street New Haven, CT 06511 203 776 0184 www.cwarchitectsllc.com

MEP ENGINEER



33 North Plains Industrial Rd Wallingford, CT 06492 203 467 4370

iesllc.biz

ENVIRONMENTAL CONSULTANT



DESIGNED BY: JOHN LUBY CT ASBESTOS PROIECT DESIGNER LICENSE #19

CT LEAD PLANNER/PROJECT DESIGNER LICENSE #986

ISSUED FOR BIDDING

MARCH 12, 2024

DESCRIPTION

PROJECT NO:

MARK DATE

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CHK'D BY:

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SHEET TITLE

ELECTRICAL NOTES, LEGEND, & SCHEDULES

E.203

THIS SECTION COVERS THE GENERAL REQUIREMENTS FOR ELECTRICAL WORK; EXAMINE ALL CONTRACT DRAWINGS AND ALL OTHER SECTIONS OF THE SPECIFICATIONS FOR ADDITIONAL WORK RELATED TO THE WORK OF THIS

### <u>DEFINITIONS</u>

'PROVIDE' - TO FURNISH, INSTALL AND CONNECT UP COMPLETE AND READY FOR SAFE AND REGULAR OPERATION OF PARTICULAR WORK REFERRED TO UNLESS, SPECIFICALLY OTHERWISE NOTED.

'INSTALL' - TO ERECT, MOUNT AND CONNECT COMPLETE WITH RELATED ACCESSORIES.

'WORK' - LABOR, MATERIALS, EQUIPMENT, APPARATUS, CONTROLS, ACCESSORIES AND OTHER ITEMS REQUIRED FOR PROPER AND COMPLETE INSTALLATION.

'WIRING' - RACEWAY, FITTINGS, WIRE, BOXES, MOUNTING HARDWARE AND RELATED ITEMS.

'CONCEALED' - EMBEDDED IN MASONRY OR OTHER CONSTRUCTION CAVITY, INSTALLED IN FURRED SPACES, WITHIN DOUBLE PARTITIONS OR HUNG CEILINGS.

'SIMILAR' OR 'EQUAL' - EQUAL MATERIALS, WEIGHT, SIZE, DESIGN AND EFFICIENCY OF SPECIFIED PRODUCT.

'CONTRACTOR' - THE ELECTRICAL CONTRACTOR.

'NOTED' - AS INDICATED ON THE DRAWINGS AND/OR SPECIFICATIONS.

THIS WORK SHALL CONSIST OF THE FURNISHINGS OF ALL LABOR, MATERIALS AND SERVICES REQUIRED COMPLETE, READY FOR CORRECT OPERATION FOR ALL ELECTRICAL WORK CALL FOR BY THE ACCOMPANYING DRAWINGS AND SPECIFICATIONS. ALL ELECTRICAL WORK SHALL BE PERFORMED IN ACCORDANCE WITH THE NATIONAL ELECTRICAL CODE, STATE AND LOCAL CODES.

THE DATA INDICATED IN THESE DRAWINGS AND SPECIFICATIONS ARE AS EXACT AS COULD BE SECURED. BUT THEIR ABSOLUTE ACCURACY IS NOT GUARANTEED. DO NOT SCALE DRAWINGS. EXACT LOCATIONS, DISTANCES, LEVELS AND OTHER CONDITIONS WILL BE GOVERNED BY THE BUILDING. USE THE DRAWINGS AND SPECIFICATIONS FOR GUIDANCE AND SECURE THE ENGINEER'S APPROVAL OF CHANGES IN LOCATIONS. CIRCUITS, WHERE SHOWN ON AN ELECTRICAL DRAWINGS, ARE SO INDICATED PRIMARILY FOR THE PURPOSE OF INDICATING THE GENERAL CIRCUIT PLAN AND DO NOT NECESSARILY INDICATE THE EXACT LOCATION OF ROUTING OF THE RACEWAYS UNLESS SPECIFICALLY INDICATED. CIRCUITS SHALL BE RUN IN SUIT CONDITIONS CONSIDERING STRUCTURAL FEATURES, OTHER TRADES, CONSTRUCTION METHODS AND GOOD INSTALLATION PRACTICE.

BEFORE SUBMITTING A BID, THE CONTRACTOR SHALL VISIT THE SITE AND BECOME THOROUGHLY FAMILIAR WITH ALL EXISTING CONDITIONS UNDER WHICH THE WORK AND WORK OF OTHER TRADES WILL BE INSTALLED. THIS CONTRACT INCLUDES ALL NECESSARY OFFSETS, TRANSITIONS, MODIFICATIONS AND RELOCATION REQUIRED TO INSTALL ALL NEW EQUIPMENT IN NEW OR EXISTING SPACES. CONTRACTOR SHALL INCLUDE ANY MODIFICATIONS REQUIRED IN EXISTING ELECTRICAL EQUIPMENT FOR INSTALLATION OF NEW ELECTRICAL EQUIPMENT AND NEW EQUIPMENT OF OTHER TRADES. (LIGHTING FIXTURES, DEVICES, CONDUIT WIRING, ETC.) ALL NEW AND EXISTING EQUIPMENT AND SYSTEMS SHALL BE FULLY OPERATIONAL UNDER THIS CONTRACT BEFORE THE PROJECT IS CONSIDERED COMPLETE. THE CONTRACTOR SHALL BE HELD RESPONSIBLE FOR ANY ASSUMPTIONS THAT ARE MADE, ANY OMISSIONS OR ERRORS MADE AS A RESULT OF FAILURE TO VISIT THE SITE AND BECOME THOROUGHLY FAMILIAR WITH THE EXISTING CONDITIONS AND THE CONTRACT DOCUMENTS OF ALL TRADES.

## CODES, REGULATIONS AND STANDARDS

ALL ELECTRICAL WORK SHALL BE PERFORMED IN ACCORDANCE WITH THE FOLLOWING APPROVED CODES, REGULATIONS AND STANDARDS:

IBC - INTERNATIONAL BUILDING CODE, 2021 EDITION, AS AMENDED BY THE STATE OF CONNECTICUT 2022

IFC - INTERNATIONAL FIRE CODE, 2021 EDITION, AS AMENDED BY THE STATE OF CONNECTICUT 2022 AMENDMENTS.

2022 CONNECTICUT STATE FIRE SAFETY CODE

## STATE DEMOLITION CODE

LOCAL BUILDING CODE

NFPA - NATIONAL FIRE PROTECTION CODE

NFPA 70 - NATIONAL ELECTRICAL CODE, 2020 EDITION, AS AMENDED BY THE STATE OF CONNECTICUT 2022 AMENDMENTS.

NFPA 72 - NATIONAL FIRE ALARM CODE, 2019 EDITION

NFPA 101 - LIFE SAFETY CODE, 2021 EDITION, AS AMENDED BY THE STATE OF CONNECTICUT 2022 AMENDMENTS.

IECC - INTERNATIONAL ENERGY CONSERVATION CODE, 2021, AS AMENDED BY THE STATE OF CONNECTICUT 2022 AMENDMENTS.

ICC/ANSI A117.1, 2017, ACCESSIBLE AND USABLE BUILDINGS AND FACILITIES, AS AMENDED BY THE STATE OF CONNECTICUT 2018 AMENDMENTS.

ANSI - AMERICAN NATIONAL STANDARDS INSTITUTE

ASTM - AMERICAN SOCIETY FOR TESTING AND MATERIALS

OSHA - OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION

U.L. - UNDERWRITERS LABORATORIES

**EPA - ENVIRONMENTAL PROTECTION AGENCY** 

IEEE - INSTITUTE OF ELECTRICAL AND ELECTRONIC ENGINEERS

NEMA - NATIONAL ELECTRICAL MANUFACTURERS ASSOCIATION

PERMITS, FEES AND INSPECTIONS THE CONTRACTOR SHALL GIVE ALL NECESSARY NOTICES, OBTAIN ALL PERMITS, PAY FOR ALL GOVERNMENT, STATE SALES TAXES AND APPLICABLE FEES. THE CONTRACTOR SHALL FILE ALL DRAWINGS, COMPLETE ALL DOCUMENTS AND OBTAIN ALL NECESSARY APPROVALS FROM THE PROPER AUTHORITY OR AGENCY HAVING JURISDICTION. OBTAIN ALL REQUIRED CERTIFICATES OF INSPECTION COVERING WORK. THE CONTRACTOR SHALL SEE THAT ALL REQUIRED INSPECTIONS AND TESTS ARE MADE AND SHALL COOPERATE TO MAKE THESE TESTS AS THOROUGH AND

# MATERIALS AND WORKMANSHIP

AS READILY MADE AS POSSIBLE.

ALL MATERIALS AND APPARATUS REQUIRED FOR THE WORK, EXCEPT AS OTHERWISE SPECIFIED, SHALL BE NEW AND OF FIRST-CLASS QUALITY. IT SHALL BE FURNISHED, DELIVERED, ERECTED, CONNECTED, FINISHED IN EVERY DETAIL AND SO SELECTED AND ARRANGED AS TO FIT PROPERLY INTO THE BUILDING SPACES. WHERE NO SPECIFIC KIND OR QUALITY MATERIAL IS GIVEN, A FIRST-CLASS STANDARD ARTICLE AS ACCEPTED BY THE ENGINEER SHALL BE FURNISHED.

ALL EQUIPMENT AND MATERIALS SHALL BE SPECIFICATION GRADE AND BEAR THE UNDERWRITER'S LABEL. NO SUBSTITUTE OR ALTERNATE EQUIPMENT, MATERIAL, ETC. WILL BE CONSIDERED FOR THIS PROJECT.

ALL WORK SHALL BE OF A QUALITY CONSISTENT WITH GOOD TRADE PRACTICE AND SHALL BE INSTALLED IN A NEAT, WORKMANLIKE MANNER, THE ENGINEER/OWNER RESERVES THE RIGHT TO REJECT ANY WORK WHICH, IN HIS OPINION, HAS BEEN INSTALLED IN A SUBSTANDARD, DANGEROUS OR IN A UNSERVICEABLE MANNER. THE CONTRACTOR SHALL REPLACE REJECTED WORK IN A SATISFACTORY MANNER AT NO EXTRA COST TO THE OWNER.

# **GUARANTEES**

ALL WORKMANSHIP AND MATERIALS SHALL BE FULLY GUARANTEED FOR A PERIOD OF ONE YEAR AFTER ACCEPTANCE OF THE ENTIRE INSTALLATION COVERED BY THIS CONTRACT. SHOULD ANY DEFECTS OCCUR DURING THE GUARANTEED PERIOD, THE CONTRACTOR SHALL REPAIR AND/OR REPLACE ALL DEFECTIVE EQUIPMENT, MATERIAL AND/OR WORK AT NO EXTRA CHARGE TO THE OWNER.

## RECORD DRAWINGS

MAINTAIN, AT THE JOB SITE, A SET OF ELECTRICAL DRAWINGS INDICATING ALL CHANGES IN LOCATION AND CIRCUITING OF THE EQUIPMENT, PANELS, DEVICES, ETC. FROM THE ORIGINAL LAYOUT. CLEARLY MARK IN RED ALL CHANGES ON THE DRAWINGS. AT THE COMPLETION OF THE PROJECT THE CONTRACTOR SHALL TURN OVER THE RECORD DRAWINGS TO THE ENGINEER/OWNER.

## <u>COORDINATION</u>

ALL WORK SHALL BE COORDINATED AND CARRIED OUT IN CONJUNCTION WITH ALL TRADES AND FULL COORDINATION DRAWINGS SHALL BE CREATED IN ORDER THAT ALL WORK MAY PROCEED WITH A MINIMUM OF DELAY AND INTERFERENCE.

## SHOP DRAWINGS

SUBMIT ELECTRONIC PDF FORMAT OR EIGHT (8) COPIES FOR REVIEW, DETAILED SHOP DRAWINGS OF ALL EQUIPMENT AND MATERIAL SPECIFIED. THE CONTRACTOR SHALL REVIEW ALL SHOP DRAWINGS PRIOR TO SUBMISSION TO THE ENGINEER FOR REVIEW. NO MATERIAL OR EQUIPMENT MAY BE DELIVERED TO THE JOB SITE OR INSTALLED UNTIL CONTRACTOR HAS IN THEIR POSSESSION, APPROVED SHOP DRAWINGS FOR THE PARTICULAR MATERIAL OR EQUIPMENT. SHOP DRAWINGS SHALL BE SPECIFIC WITH ITEMS SUBMITTED FOR APPROVAL CLEARLY

THE FOLLOWING IS A LIST OF ELECTRICAL ITEMS THAT MUST BE SUBMITTED FOR REVIEW:

- a. PANELBOARDS
- b. LOAD CENTERS
- c. SAFETY/DISCONNECT SWITCHES d. CIRCUIT BREAKERS
- e. LIGHTING
- f. FUSES
- q. CONDUIT, WIRE AND CABLE h. FIRE ALARM EQUIPMENT

i. DEVICES (RECEPTACLES, TOGGLE SWITCHES, ETC.)

## OPERATING INSTRUCTIONS

THE CONTRACTOR SHALL FURNISH TO THE ENGINEER, FOUR (4) COMPLETE BOUND SETS OF TYPEWRITTEN OR BLUEPRINTED INSTRUCTIONS FOR OPERATING AND MAINTAINING ALL SYSTEMS AND EQUIPMENT INCLUDED IN THIS DIVISION. MANUFACTURER'S ADVERTISING LITERATURE OR CATALOGS WILL NOT BE ACCEPTABLE FOR OPERATING

THE CONTRACTOR, IN THE ABOVE-MENTIONED INSTRUCTIONS, SHALL INCLUDE THE MAINTENANCE SCHEDULE FOR THE PRINCIPAL ITEMS OF EQUIPMENT FURNISHED UNDER THIS DIVISION.

AN AUTHORIZED MANUFACTURER'S REPRESENTATIVE SHALL ATTEST IN WRITING THAT HIS EQUIPMENT HAS BEEN PROPERLY INSTALLED PRIOR TO STARTUP. THESE LETTERS WILL BE BOUND INTO OPERATING AND MAINTENANCE

PROPERLY AND COMPLETELY PROTECT AGAINST ALL DAMAGE, ALL APPARATUS, EQUIPMENT, ETC., INCLUDED IN THIS CONTRACT. THE CONTRACTOR WILL BE HELD RESPONSIBLE FOR ANY DAMAGE TO FURNISHED APPARATUS, EQUIPMENT, ETC., UNTIL FINAL ACCEPTANCE.

## PROPERTY PROTECTION

THE CONTRACTOR SHALL TAKE WHATEVER MEANS NECESSARY AND/OR REQUIRED TO PROTECT OWNER'S PROPERTY WITHIN THE WORKING AREAS FROM DUST, DEBRIS AND OTHER MATTER GENERATED BY THE WORK. NO WORK SHALL COMMENCE IN AREAS WHERE PROTECTION IS REQUIRED UNTIL APPROVAL HAS BEEN GIVEN TO THE CONTRACTOR BY THE OWNER.

INSTALL ALL EQUIPMENT IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS OR REQUIREMENTS FOR PROPER OPERATION AND MAINTENANCE.

## **EQUIPMENT PAINTING AND CLEANING**

THOROUGHLY CLEAN ALL ELECTRICAL EQUIPMENT DEVICES AND ENCLOSURES UPON COMPLETION OF ALL WORK. REPAINT ANY EQUIPMENT WHOSE FINISH IS DAMAGED OR RUSTED. MATCH MANUFACTURER'S ORIGINAL FINISH.

# **DEMOLITION/REMOVAL AND RECONNECTION**

BEFORE SUBMITTING A BID, THE CONTRACTOR SHALL VISIT THE SITE AND BECOME THOROUGHLY FAMILIAR WITH ALL EXISTING CONDITIONS UNDER WHICH HIS WORK WILL BE INSTALLED.

ALL EXISTING ACTIVE CIRCUITS WHICH FEED EQUIPMENT OR DEVICES THAT ARE TO REMAIN, SHALL BE MAINTAINED IN SERVICE AND SHALL BE PERMANENTLY REFED.

ALL ITEMS BEING REMOVED SHALL REMAIN THE PROPERTY OF THE CONTRACTOR AND REMOVED FROM THE SITE UNLESS OTHERWISE INDICATED. EQUIPMENT AND DEVICES THE OWNER DOES NOT WISH TO RETAIN SHALL BECOME THE PROPERTY OF THIS CONTRACTOR AND SHALL BE REMOVED FROM THE SITE.

ALL MATERIAL CHOSEN TO BE RETAINED BY THE OWNER SHALL BE DELIVERED BY THE CONTRACTOR TO SUCH POINT AS DESIGNATED BY THE OWNER.

MATERIAL TO BE REUSED SHALL BE CAREFULLY REMOVED AND STORED AND SHALL BE REINSTALLED IN AS-FOUND CONDITION EXCEPT AS OTHERWISE INDICATED ON THE PLANS. DAMAGE OR LOSS OF MATERIAL TO BE REUSED SHALL BE THE CONTRACTOR'S RESPONSIBILITY AND SHALL BE REPAIRED OR REPLACED WITH THE EQUIVALENT MATERIAL ACCEPTABLE BY THE OWNER.

DISCONNECT AND REMOVE ALL EXISTING ELECTRICAL WORK IN CONTRACT AREA AS INDICATED ON DRAWINGS.

ALL WIRING AND CABLING SHALL BE REMOVED BACK TO ORIGINATION PANEL, UNLESS OTHERWISE INDICTED.

CONTRACTOR SHALL KEEP PREMISES FREE FROM ACCUMULATION OF WASTE MATERIAL AND RUBBISH, AND AT COMPLETION OF WORK DAY, SHALL REMOVE ALL RUBBISH AND IMPLEMENTS TO A DESIGNATED LOCATION, IF AVAILABLE, LEAVING WORK AREAS BROOM CLEAN. UNUSED OUTLET BOXES AND PLASTER RINGS SHALL BE PROVIDED WITH BLANK COVER PLATES AND MATCH DEVICE PLATES WITHIN THE ROOM.

# PENETRATION SEALANT

ALL PENETRATIONS SHALL BE SEALED WITH 3M INTUMESCENT FIRE BARRIER PENETRATION SEALANT, APPLIED PER MANUFACTURER'S AND U.L. GUIDELINES.

CUTTING, PATCHING, REPAIRING AND PAINTING

THE GENERAL CONTRACTOR SHALL PERFORM ALL CUTTING, PATCHING, REPAIRING AND PAINTING FOR ALL ELECTRICAL ITEMS AND EQUIPMENT CALLED FOR UNDER THIS CONTRACT.

# FIRE STOPS AND SEALS

PENETRATIONS THROUGH FIRE-RATED WALLS, CEILING OR FLOORS IN WHICH CABLES OR CONDUITS PASS SHALL BE FILLED SOLIDLY BY U.L. APPROVED FIRE-STOP MATERIALS, CLASSIFIED FOR AN HOUR RATING EQUAL TO THE FIRE RATING OF THE WALL, CEILING OR FLOOR. PROVIDE TO 3M BRAND FIRE BARRIER CP25WB CAULK OR APPROVED EQUIVALENT.

SEALING BUSHINGS SHALL BE USED ON CONDUIT AND CABLE ENDS TO EFFECTIVELY PREVENT THE INTRUSION OF WATER, A DAMP OR CORROSIVE ATMOSPHERE, DRAFT OR DUST.

# **ACCESS PANELS**

THE CONTRACTOR SHALL FURNISH AND INSTALL ACCESS PANELS AND DOORS AS REQUIRED FOR ACCESS TO INACCESSIBLE PULLBOXES, JUNCTION BOXES AND OTHER SPECIALTIES.

THE CONTRACTOR SHALL COORDINATE THE LOCATIONS OF ACCESS PANELS AND DOORS WITH THE GENERAL CONTRACTOR AND OTHER TRADES. FINAL LOCATIONS SHALL BE SUBJECT TO THE APPROVAL OF THE ARCHITECT.

## INTERRUPTION OF EXISTING SERVICES

PRIOR TO PERFORMING WORK REQUIRING INTERRUPTION OF EXISTING SERVICES, THE CONTRACTOR SHALL SECURE FROM THE OWNER, APPROVAL OF THE PROPOSED OPERATION. (48 HOURS IN ADVANCE) WORK SHALL BE ARRANGED FOR CONTINUOUS PERFORMANCE. THE CONTRACTOR SHALL PROVIDE ALL NECESSARY LABOR, INCLUDING OVERTIME, OF REQUIRED, TO ASSURE THAT THE EXISTING OPERATING SERVICES WILL BE SHUT DOWN ONLY DURING THE TIME ACTUALLY REQUIRED TO MAKE NECESSARY CONNECTIONS.

## TEMPORARY LIGHT AND POWER

FURNISH AND INSTALL TEMPORARY ELECTRICAL SERVICE OF SUFFICIENT SIZE FOR POWER AND LIGHTING USE BY ALL TRADE CONTRACTORS DURING THE COURSE OF CONSTRUCTION. ALL TEMPORARY WORK SHALL BE DONE IN COMPLIANCE WITH ALL APPLICABLE ARTICLES IN THE NATIONAL ELECTRICAL CODE, O.S.H.A. AND WITH ALL REQUIREMENTS OF ANY AUTHORITY HAVING JURISDICTION OVER THE WORK. PROVIDE TEMPORARY POWER CONNECTION TO A CONSTRUCTION TRAILER. THE LOCATION OF THE TRAILER IS TO BE DETERMINED ON SITE PROVIDE FEEDER TO TRAILER OF SUFFICIENT SIZE TO POWER HEATING, AIR CONDITIONING, GENERAL POWER AND

### <u>PART 2 - PRODUCTS</u>

ALL MATERIALS AND EQUIPMENT PROVIDED UNDER THIS SECTION SHALL BE NEW, FIRST GRADE, BEST OF THEIR RESPECTIVE KINDS AND IN NO WAY SHALL THEY BE LESS THAN THE QUALITY AND INTENT SET FOURTH UNDER THIS SECTION. THEY SHALL MEET THE REQUIREMENTS OF ALL STANDARDS SET UP TO GOVERN THE MANUFACTURER OF ELECTRICAL MATERIALS AND COMPLY WITH ALL APPLICABLE CODES AND STANDARDS.

CONDUCTORS SHALL BE U.L. LISTED, 600 VOLTS, 90 DEG. C., SINGLE CONDUCTOR TYPE THWN/THHN. 98% CONDUCTIVITY, ANNEALED UNCOATED COPPER WITH PVC INSULATION COVERED WITH NYLON SHEATH JACKET. TESTED IN ACCORDANCE WITH THE REQUIREMENTS OF UNDERWRITERS LABORATORIES STANDARD 83. WIRE SHALL BE IDENTIFIED BY SURFACE MARKING INDICATING MANUFACTURER'S IDENTIFICATION CONDUCTOR SIZE AND METAL, VOLTAGE RATING, U.L. SYMBOL AND TYPE DESIGNATION. CONDUCTORS SHALL BE STRANDED. MINIMUM SIZE SHALL BE #12 AWG UNLESS OTHERWISE INDICATED. MANUFACTURED BY ROME CABLE, TRIANGLE WIRE & CABLE, GENERAL CABLE OR ESSEX WIRE & CABLE.

# RIGID GALVANIZED STEEL CONDUIT (RGS)

RIGID STEEL CONDUIT SHALL BE FULL WEIGHT, HEAVY WALL STEEL PIPE WITH GALVANIZED PROTECTIVE COATING. MANUFACTURED BY TRIANGLE WIRE AND CABLE, ALLIED TUBE AND CONDUIT, REPUBLIC OR STEELDUCT. CONDUIT FITTINGS SHALL BE MALLEABLE IRON, CADMIUM PLATED WITH FULL THREADED HUBS.

## RIGID POLYVINYL CHLORIDE CONDUIT (PVC)

RIGID POLYVINYL CHLORIDE CONDUIT SHALL BE TYPE DB, SCHEDULE 40, SUNLIGHT RESISTANT, RATED OR USE WITH 90 DEGREES C. CONDUCTORS, U.L. RATED. ALL PVC CONDUIT AND FITTINGS SHALL BE SOLVENT WELDED. MANUFACTURED BY CARLON, ELECTRI-FLEX OR PLASTILINE.

## **ELECTRIC METALLIC TUBING (EMT)**

ELECTRICAL METALLIC TUBING SHALL BE GALVANIZED THIN WALL STEEL CONDUIT. MANUFACTURED BY TRIANGLE WIRE AND CABLE, ALLIED TUBE AND CONDUIT, REPUBLIC OR STEELDUCT. THE CONNECTORS AND COUPLINGS SHALL BE HEAVY DUTY, STEEL-ZINC PLATED, SET SCREW TYPE.

## FLEXIBLE METALLIC CONDUIT (FMC)

FLEXIBLE METALLIC CONDUIT SHALL BE OF HEAVY GALVANIZED SHEET METAL STRIP IN INTERLOCKED CONSTRUCTION. MANUFACTURED BY TRIANGLE WIRE AND CABLE, AMERICAN FLEXIBLE CONDUIT OR ELECTRIC-FLEX. THE CONNECTORS SHALL BE SQUEEZE TYPE MALLEABLE IRON, CADMIUM PLATED.

## LIQUID-TIGHT FLEXIBLE METAL CONDUIT (LFMC)

LIQUID-TIGHT FLEXIBLE CONDUIT SHALL BE CONSTRUCTED OF HEAVY GALVANIZED SHEET METAL STRIP, SPIRALLY-WOUND INTERLOCK CONSTRUCTION WITH AN EXTRUDED POLYVINYL GRAY JACKET. CONDUIT SHALL BE U.L. LABELED AND CONFORMED TO THE APPLICATION AND ENVIRONMENT IN WHICH IT WILL BE USED. ALL CONNECTIONS, COUPLINGS AND FITTINGS SHALL BE OF HIGH QUALITY STEEL-ZINC RATED TYPE SPECIFICALLY DESIGNED FOR THIS PURPOSE. MANUFACTURED BY O/Z GEDNEY OR ELECTRI-FLEX.

# METAL CLAD CABLE (MC)

METAL CLAD CABLE SHALL BE INTERLOCKING GALVANIZED STEEL ARMOR CONSTRUCTION. COLOR CODED THERMOPLASTIC/NYLON INSULATION THHN, 90 DEGREE C., 600 VOLTS, COPPER CONDUCTORS AND INTERNAL INSULATED EQUIPMENT COPPER GROUND CONDUCTOR. MARKER TAPE AND CABLE TAPE OVER MINIMUM SIZE #12 AWG UNLESS OTHERWISE INDICATED. MANUFACTURED BY AMERICAN FLEXIBLE CONDUIT, TRIANGLE WIRE AND CABLE, GENERAL CABLE OR STANDARD CABLE.

# <u>FITTINGS</u>

CONDUIT BODIES FOR RIGID GALVANIZED STEEL CONDUIT (RGS) SHALL BE MALLEABLE IRON-ZINC PLATED WITH TAPERED HUBS AND GASKETED ALUMINUM COVER.

CONDUIT BODIES FOR ELECTRICAL METALLIC TUBING (EMT) SHALL BE CAST ALUMINUM-ALUMINUM ENAMEL FINISH WITH SET SCREW HUBS AND ALUMINUM COVER.

INSULATION BUSHINGS SHALL BE HIGH IMPACT THERMOPLASTIC PHENOLIC WITH 150 DEG. C. UL TEMPERATURE INSULATED GROUNDING BUSHINGS SHALL BE MALLEABLE IRON ZINC PLATED WITH MOLDED ON PHENOLIC

# CONDUIT LOCKNUTS SHALL BE HEAVY NUT STOCK STEEL-ZINC PLATED.

OFFSET NIPPLES SHALL BE MALLEABLE IRON ZINC PLATED WITH RIGID CONDUIT THREADING AND 3/4" OFFSET. CONNECTORS AND COUPLINGS FOR ELECTRICAL METALLIC TUBING (EMT) SHALL BE HEAVY STEEL-ZINC PLATED

WITH PRE-SET/PRE-SHAKED SET SCREWS.

METAL CLAD CABLE AND FLEXIBLE METALLIC CONDUIT CONNECTORS SHALL BE MALLEABLE IRON-ZINC PLATED,

# CONDUIT STRAPS SHALL BE SNAP-TYPE, DOUBLE RIBBED STEEL-ZINC PLATED.

MALE HUB THREADS WITH LOCKNUT.

CONDUIT FITTINGS SHALL BE MANUFACTURED BY O/Z GEDNEY, CROUSE-HINDS OR APPLETON.

# SUPPORT FITTINGS

INSULATION AND LAY-IN GROUNDING LUG.

SUPPORT CHANNEL SHALL BE ROLL-FORMED #12 GAUGE STEEL, SOLID BASE OR BOLT HOLE BASE - HOT DIP GALVANIZED FINISH. COMPLETE WITH ANGLE FITTINGS, SPRING NUTS, CONDUIT SUPPORTS, 3/8" OR 1/2" THREADED RODS (SIZE REQUIRED FOR LOAD), ETC.

# CABLE TIES

CABLE TIES SHALL BE FABRICATED OF ONE-PIECE HALLAR WITH NO METAL PARTS. MANUFACTURED BY BURNDY, T&B, PANDUIT OR BLACKBURN.

FUSES SHALL NOT BE INSTALLED UNTIL EQUIPMENT IS READY TO BE ENERGIZED. THIS MEASURE PREVENTS FUSE DAMAGE DURING SHIPMENT OF THE EQUIPMENT FROM THE MANUFACTURER TO THE JOB SITE.

ALL FUSES SHALL BE FURNISHED AND INSTALLED BY THE CONTRACTOR. FUSES SHALL BE OF THE SAME MANUFACTURER, COPPER BUSSMAN, FERRAZ SHAWMUT OR LITTLEFUSE. FUSE TYPES DESCRIBE BELOW SHALL BE U.L. LISTED DUAL ELEMENT TIME DELAY TYPE.

CIRCUIT 0 TO 600 AMPERE SHALL BE PROTECTED BY DUAL ELEMENT, TIME DELAY, CURRENT LIMITING FUSES WITH AN INTERRUPTING RATING OF 200,000 A.I.C. U.L. LISTED CLASS 'RK1'.

MOTOR CIRCUITS SHALL BE PROTECTED BY DUAL ELEMENT, TIME DELAY, CURRENT LIMITING FUSES WITH AN INTERRUPTING RATING OF 200,000 A.I.C. U.L. LISTED CLASS 'RK1'.

OF 200,000 A.I.C. U.L. LISTED CLASS 'L' KLP-C. CIRCUIT BREAKER PANELBOARDS SHALL BE PROTECTED BY DUAL ELEMENT, TIME DELAY, CURRENT LIMITING FUSES

LARGE MOTORS SHALL BE PROTECTED BY TIME DELAY, CURRENT LIMITING FUSES WITH AN INTERRUPTING RATING

FUSES SHALL HAVE VOLTAGE RATING BASED ON DISTRIBUTION REQUIREMENT SYSTEMS.

WITH AN INTERRUPTING RATING OF 200,000 A.I.C. U.L. LISTED CLASS 'RK1'.

UPON COMPLETION OF THE WORK, THE CONTRACTOR SHALL PROVIDE THE OWNER WITH THE SPARE FUSES LISTED

10% (MINIMUM OF THREE) OF EACH TYPE AND RATING INSTALLED, 0 TO 600 AMPERES.

SPARE FUSE CABINET, CATALOG NUMBER 'LSFCL, SHALL BE PROVIDED TO STORE THE ABOVE SPARES (SIZE 30"H x 24"W x 12"D).

OUTLET BOXES SHALL BE GALVANIZED STEEL, FLUSH OR SURFACE MOUNTED AND OF PROPER TYPE AND SIZE AS REQUIRED FOR THE PARTICULAR APPLICATION. SIZE AND TYPE DICTATED BY THE NUMBER OF DEVICES, NUMBER OF CONDUCTORS AND WIRING METHOD UTILIZED. BOXES SHALL BE ADEQUATE SIZE FOR THE INSTALLATION OF CONDUCTORS WITHOUT EXCESSIVE BENDING OR CRIMPING OF THE CONDUCTORS AND DAMAGING OF CONDUCTOR INSULATION. MANUFACTURED BY STEEL CITY OR RACO.

OUTLET BOXES SHALL BE SECURED FIRMLY IN PLACE TO THE BUILDING STRUCTURE AND SET TRUE AND SQUARE. PROVIDE SUITABLE MEANS TO SUPPORT OUTLET BOX TO TAKE THE WEIGHT OF THE LIGHTING FIXTURE OR DEVICE. OUTLET BOXED OR BOX EXTENSION RINGS SHALL BE SET FLUSH TO THE FINISHED WALL OR CEILING. BOXES MUST BE ATTACHED THAT THEY WILL NOT 'ROCK', 'SHIFT' OR 'MOVE IN AND OUT' WHEN DEVICES ARE USED. IN NO CASE SHALL BOXES BE INSTALLED BACK-TO-BACK IN A COMMON WALL DIVIDING TWO SPACES.

WHERE MORE THAN ONE OUTLET IS SHOWN OR SPECIFIED TO BE THE SAME ELEVATION OR ONE ABOVE THE OTHER, ALIGN THEM EXACTLY ON CENTER LINES HORIZONTALLY OR VERTICALLY.

MULTIPLE SWITCHES SHOWN AT ONE LOCATION SHALL BE INSTALLED GANGED TOGETHER UNDER ONE WALL PLATE. SWITCHES SHALL BE ARRANGED IN AN ORDER APPROPRIATE TO THE LOCATIONS OF LIGHTING FIXTURE BEING CONTROLLED.

SEE DRAWINGS FOR TYPE AND SIZE. MANUFACTURED BY WIREMOLD.

## MAIN SERVICE ENTRANCE CABINET

REFER TO ONE-LINE POWER RISER AND NOTES FOR REQUIREMENTS. THE SERVICE ENTRANCE SHALL HAVE A CONTINUOUS CURRENT RATING OF 600 AMPERES AT (240Y/120V), SINGLE (1) PHASE, THREE (3) WIRE, 60 CYCLE WITH A SHORT CIRCUIT RATING OF 100,000 AMPERES RMS SYMMETRICAL OR AS INDICATED ON SCHEDULES. U.L. LISTED AND LABELED FOR SERVICE ENTRANCE. (WALL) (FLOOR) MOUNTED TAMPER-PROOF ENCLOSURE WITH ANSI-61 LIGHT GRAY PAINT FINISH. FRONT ACCESSIBLE CABLE TERMINATORS. ALL BUS CONDUCTORS SHALL BE TIN PLATED ALUMINUM. 600A (FUSIBLE SWITCH) MAIN DEVICE.

UTILITY, CURRENT TRANSFORMER COMPARTMENT INCLUDES FRONT HINGED COVER WITH PROVISION FOR LOCK WIRE SEALING AND BAR TYPE CURRENT TRANSFORMER MOUNTING, PROVIDE PULL SECTION WIRE COMPARTMENT. MANUFACTURED BY ABB, SIEMENS, SQUARE 'D', CUTLER HAMMER. REFER TO PLANS FOR ADDITIONAL REQUIREMENTS.

# **PANELBOARDS**

PANELBOARDS SHALL BE THE COMBINATION THERMAL/MAGNETIC CIRCUIT BREAKER TYPE, 3 PHASE, 4 WIRE WITH THE NUMBER OF BRANCH CIRCUITS AS INDICATED ON THE SCHEDULES. PROVIDE WITH FULLY RATED HARD-DRAWN COPPER, 98 PERCENT CONDUCTIVE PHASE AND GROUND BUS. LUGS SIZED TO ACCOMMODATE WIRE QUALITY AND SIZES. PANELS SHALL BE U.L. LISTED. DOOR-IN-DOOR DESIGN. BOXES SHALL BE CORROSION RESISTANT, ZINC FINISH GALVANIZED. FRONTS SHALL BE REINFORCED STEEL POWDER FINISH PAINTED LIGHT GRAY (ANSI-61) AND SHALL BE EQUIPPED WITH CONCEALED HINGES AND CONCEALED TRIM ADJUSTING SCREWS. DIRECTORY CARD HOLDERS SHALL BE CORROSION-PROOF VALOX WITH RETRACTABLE LATCH, KEYED ALIKE. PHASE BUS SHALL BE SEQUENCED AND FULLY INSULATED RATINGS SHALL BE DISPLAYED ON THE DEAD FRONT SHIELD AND TOTALLY VISIBLE WITH THE DOOR OPEN. REFER TO SCHEDULES FOR OTHER REQUIREMENTS.

# CIRCUIT BREAKERS

BRANCH CIRCUIT BREAKERS SHALL BE QUICK-MAKE, QUICK-BREAK, (PLUG-IN) (BOLT-IN) THERMAL MAGNETIC TYPE WITH VISIBLE CURRENT RATING AND TRIP POSITION. MANUFACTURED BY ABB, SIEMENS, SQUARE 'D' OR CUTLER HAMMER. REFER TO SCHEDULES FOR AIC RATING.

FOR CIRCUIT BREAKER SIZES 100 AMPS AND LARGER PROVIDE THE FOLLOWING: ELECTRONIC TRIP CIRCUIT BREAKERS WITH RMS SENSING; FIELD-REPLACEABLE RATING PLUG OR FIELD-REPLICABLE ELECTRONIC TRIP; AND THE FOLLOWING FIELD-ADJUSTABLE SETTINGS:

# 3. LONG AND SHORT TIME ADJUSTMENTS

1. INSTANTANEOUS TRIP 2. LONG AND SHORT TIME PICKUP LEVELS

PHASE SEQUENCE AND BALANCING

ALL MULTI-POLE BREAKERS SHALL BE EQUIPPED WITH HANDLE TIES FOR MULTI-POLE USE.

# THE ENTIRE SYSTEM. BALANCING ALL FEEDERS AND CIRCUITS TO WITHIN 10 PERCENT.

SAFETY/DISCONNECT SWITCHES

DISCONNECT/SAFETY SWITCHES SHALL BE MOTOR RATED, METAL ENCLOSED, INTERLOCKING, FUSIBLE OR NONFUSED AS INDICATED. HEAVY DUTY TYPE, WITH APPROPRIATE VOLTAGE RATINGS, QUICK-MAKE, QUICK-BREAK MECHANISMS, SOLID NEUTRAL AND U.L. LISTED. SWITCHES SHALL HAVE PROPER TYPE METAL ENCLOSURES; STANDARD, WEATHERPROOF, DUSTPROOF, ETC., TO SUIT THEIR SPECIFIC LOCATIONS. MANUFACTURED BY ABB, SIEMENS, SQUARE 'D', OR CUTLER HAMMER.

MAINTAIN CORRECT PHASE SEQUENCE OF ALL FEEDERS AND CIRCUITS WITH PHASE IDENTIFICATION THROUGHOUT

# **COMBINATION MOTOR STARTERS**

FURNISH AND INSTALL COMBINATION MOTOR STARTER, NEMA SIZE X, NEMA TYPE X, RATED FOR (208, 480 VOLT), 3 PHASE, (NON-FUSED, FUSED, THERMAL MAGNETIC CIRCUIT BREAKER, MOTOR CIRCUIT PROTECTOR), FULL VOLTAGE, NON-REVERSING, MELTING ALLOY OVERLOADS, HAND-OFF-AUTO SWITCH AND AUXILIARY CONTACTS. MANUFACTURED BY ABB, SIEMENS, SQUARE D OR ALLEN BRADLEY.

PROFESSIONAL SEAL



ARCHITECT

203 235 7146



www.girlsincmeriden.org

New Haven, CT 06511

www.cwarchitectsllc.com

MEP ENGINEER

85 Willow Street

203 776 0184



33 North Plains Industrial Rd Wallingford, CT 06492 iesllc.biz

ENVIRONMENTAL CONSULTANT

DESIGNED BY: IOHN LUBY



CT ASBESTOS PROJECT DESIGNER LICENSE #19

CT LEAD PLANNER/PROJECT DESIGNER LICENSE #986

ISSUED FOR BIDDING

MARCH 12, 2024

DESCRIPTION

MARK DATE PROJECT NO:

DRAWN BY:

CHK'D BY:

SHEET TITLE

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CWA PROJECT NO.: 2313

**ELECTRICAL SPECIFICATIONS** 

E.204

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FURNISH AND INSTALL FRACTIONAL HORSEPOWER MANUAL MOTOR STARTERS WITH ON-OFF CONTROL. THERMAL OVERLOAD RELAY AND PILOT LIGHTS. MANUFACTURED BY ABB, SIEMENS, SQUARE 'D', OR ALLEN BRADLEY.

	<u>ABB</u>	SQUARE 'D'	ALLEN BRADLEY	SIEMENS
1 POLE, SURFACE	CR101Y11	2510FG1P	600-TAX4	SMFFG1F
2 POLE, SURFACE	CR101H11	2510FG2P	600-TAX5	SMFFG2F

### JUNCTION BOXES, PULLBOXES AND WIREWAYS

JUNCTION BOXES, PULLBOXES AND WIREWAYS SHALL BE OF PROPER TYPE AND SIZES AS REQUIRED. CODE GAUGE, GALVANIZED STEEL WITH KNOCKOUTS AND FLANGES TO RECEIVE THE COVERS. COVERS SHALL BE FLAT, OF THE SAME MATERIAL AS THE BOX AND FASTENED TO THE BOX WITH MACHINE SCREWS. MANUFACTURED BY HOFFMAN, SQUARE 'D', OR LEE PRODUCTS.

### BACKBOARDS

BACKBOARDS SHALL BE FIRE RETARDENT, HICKSON CO. (DRI-CON) 3/4 INCH TYPE AS PLYWOOD OF SUFFICIENT SIZE FOR MOUNTING OF SPECIFIED EQUIPMENT. PAINT ALL SIDES WITH TWO (2) COATS OF FIRE-RETARDENT GRAY ENAMEL PAINT.

## GROUND RODS

GROUND RODS SHALL BE HIGH STRENGTH STEEL CORE WITH ELECTROLYTIC ALLY BONDED COPPER JACKET. GROUND RODS SHALL CONFORM TO THE REQUIREMENTS OF THE U.I. SPEC. NO. 467 (ANSI C-33.8-1972). MINIMUM SIZE SHALL BE 5/8 INCH DIAMETER BY EIGHT (8') FT. UNLESS OTHERWISE INDICATED. LENGTH MANUFACTURED BY ERICO, BLACKBURN PRODUCTS, ANIXTER, OR GAVIN.

### WIRING DEVICES

ALL DEVICES SHALL BE COMMERCIAL SPECIFICATION GRADE, U.L. LISTED, SELF-GROUNDING, GROUND LUG, SIDE/BACK WIRED. COLOR SHALL BE SELECTED BY ARCHITECT OR OWNER UNLESS OTHERWISE INDICATED. MANUFACTURED BY HUBBELL, LEVITON, OR PASS & SEYMOUR.

ALL DEVICES SHALL BE HOSPITAL GRADE, U.L. LISTED, SELF-GROUNDING, GROUND LUG, BACK AND SIDE WIRED. COLOR SHALL BE SELECTED BY ARCHITECT OR OWNER UNLESS OTHERWISE INDICATED. MANUFACTURED BY HUBBELL, LEVITON, OR PASS & SEYMOUR.

DEVICES COLOR SHALL BE SELECTED BY ARCHITECT OR OWNER UNLESS OTHERWISE INDICATED FOR NORMAL POWER CIRCUITS AND RED FOR EMERGENCY POWER CIRCUITS.

RECEPTACLES THAT HAVE A POWER FEED THRU (FEED IN - FEED OUT) ARRANGEMENT SHALL BE PIGTAILED. FEED THRU FEATURE ON DUPLEX RECEPTACLES USE IS NOT ACCEPTABLE.

RECEPTACLES: 20A 125V	HUBBELL	<u>LEVITON</u>	PASS & SEYMOUR
DUPLEX RECEPTACLE DUPLEX RECEPTACLE - GECT	BR20	5362	CRB5362
	GF20 AI	7899	2095

ALL INSTALLED RECEPTACLES UNDER THIS PROJECT SHALL BE TESTED AND CERTIFIED AS PER JOINT COMMISION CERTIFICATION REQUIREMENTS. THE CONTRACTOR SHALL UTILIZE HOSPITAL FURNISHED EQUIPMENT TO PERFORM REQUIRED TESTING. CONSULT WITH FACILITIES ENGINEER FOR REQUIREMENTS.

WALL PLATES FOR SWITCHES AND RECEPTACLES SHALL BE STAMPED STEEL FOR FURNISHED AREAS. MANUFACTURED BY HUBBELL.

RECEPTACLES LOCATED IN WET LOCATIONS SHALL BE INSTALLED WITH AN OUTLET ENCLOSURE CLEARLY MARKED 'SUITABLE FOR WET LOCATIONS WHILE IN USE'. THERE MUST BE A GASKET BETWEEN THE COVER AND THE BASE TO ASSURE A PROPER SEAL. THE ENCLOSURE MUST EMPLOY STAINLESS STEEL MOUNTING HARDWARE AND BE CONSTRUCTED OF IMPACT RESISTANT POLYCARBONATE. THE OUTLET ENCLOSURE SHALL BE U.L. LISTED. MANUFACTURED BY HUBBELL, OR APPROVED EQUAL.

# EMERGENCY LIGHTING AND EXIT LIGHTING SYSTEM

FURNISH AND INSTALL WHERE SHOWN ON PLANS, A SYSTEM OF UNITS SO ARRANGED THAT IN CASE OF POWER FAILURE, THESE LIGHTS WILL AUTOMATICALLY ILLUMINATE THE EGREES AND EXIT AREAS. UNIT SHALL BE U.L. LISTED AND SHALL MEET THE REQUIREMENTS OF THE N.E.C., N.F.P.A. 101 LIFE SAFETY CODE. CONNECT EMERGENCY LIGHTING AND EXIT SIGNAGE TO LOCAL LIGHTING BRANCH CIRCUIT AHEAD OF SWITCHING DEVICE (CONSTANT POWER).

# POWER AND CONTROL WIRING

FURNISH AND INSTALL ALL POWER WIRING, CONTROL WIRING (120VAC), CONDUIT AND FITTINGS FOR ALL PLUMBING, HEATING AND VENTILATING AND AIR CONDITIONING EQUIPMENT AND FINAL CONNECTIONS, MANUAL MOTOR STARTERS SHALL BE FURNISHED, INSTALLED AND WIRED BY THE ELECTRICAL CONTRACTOR. EVERY MOTOR SHALL BE PROVIDED WITH RUNNING OVERLOAD PROTECTION. UPON COMPLETION OF WORK, CHECK OUT EACH ITEM. ITEMS TO BE CHECKED ARE VOLTAGE, ROTATION AND OVERLOAD PROTECTION.

# PART 3 - EXECUTION

# **INSTALLATION**

ALL WORK, MATERIALS AND MANNER OF INSTALLING SAME SHALL BE IN STRICT ACCORDANCE WITH THE LATEST REQUIREMENTS OF THE NATIONAL ELECTRIC CODE.

ALL CONDUIT AND WIRING SHALL BE INSTALLED CONCEALED UNLESS OTHERWISE NOTED.

WIRING IN UNFINISHED AREAS SHALL BE INSTALLED EXPOSED USING EMT OR RGS CONDUIT.

WIRING IN FINISHED AREAS SHALL BE INSTALLED IN WIREMOLD RACEWAY

# **RACEWAYS**

RACEWAYS, ENCLOSURES AND BOXES SHALL BE MECHANICALLY JOINED TO FORM A CONTINUOUS ELECTRICAL

THE CONTRACTOR SHALL PROVIDE APPROVED TYPE PULL BOXES AS REQUIRED.

MINIMUM SIZE CONDUIT SHALL BE 3/4" UNLESS OTHERWISE NOTED.

FURNISH NYLON PULL STRINGS IN ALL EMPTY CONDUIT RUNS.

FURNISH LOCKNUTS AND BUSHINGS FOR ALL CONDUIT TERMINATIONS IN ALL OUTLET BOXES, PANELS, PULL BOXES, CONDUIT STUBS, ETC.

RIGID GALVANIZED STEEL CONDUIT (RGS) SHALL BE USED FOR WIRING IN THE FOLLOWING LOCATIONS:

- SERVICE POLE RISERS
- 2. BURIED UNDER GRADE FOR SERVICE ENTRANCE CONDUCTORS
- 3. WITHIN CONCRETE SLABS
- 4. EXPOSED TO MOISTURE AND MECHANICAL DAMAGE EXTERIOR INSTALLATIONS

ELECTRICAL METALLIC TUBING (EMT) SHALL BE USED FOR CONCEALED AND EXPOSED WIRING IN DRY LOCATIONS

- 1. INTERIOR PANEL FEEDERS
- 2. EXPOSED TO MOISTURE WITH WATER PROOF COMPRESSION FITTINGS

3. INTERIOR LIGHTING, RECEPTACLE AND POWER BRANCH CIRCUIT WIRING

RIGID POLYVINYL CHLORIDE (PVC) SHALL BE USED FOR WIRING IN THE FOLLOWING LOCATIONS:

- 1. BURIED UNDER GRADE FOR SERVICE ENTRANCE PRIMARY AND SECONDARY CONDUCTORS.
- 2. LIGHTING AND POWER BRANCH CIRCUIT WIRING BURIED UNDER GRADE
- 3. BELOW CONCRETE SLABS 4. EXPOSURE TO MOISTURE
- EXTERIOR FEEDERS SHALL BE INSTALLED IN RGS CONDUIT.
- ALL CONDUIT SHALL BE INSTALLED IN PARALLEL AND PERPENDICULAR TO THE BUILDING LINES.
- ALL CONDUIT SHALL BE SUPPORTED USING CADMIUM PLATED CONDUIT STRAPS AND HANGERS.

SEPARATE CONDUIT SYSTEMS SHALL BE INSTALLED FOR NORMAL AND EMERGENCY POWER.

PROVIDE WIRING TO ALL OUTLETS, EQUIPMENT, APPARATUS AND OTHER SPECIALTIES UNDER THIS DIVISION THAT WHICH FURNISHED OR PROVIDED UNDER OTHER DIVISIONS OR BY THE OWNER.

THE TERM 'WIRING' SHALL BE CONSIDERED TO BE COMPRISED OF THE CONDUIT, CONDUCTORS, CONNECTIONS,

ALL WIRING ON DRAWINGS IS SIZED FOR TYPE THWN/THHN COPPER CONDUCTORS.

MINIMUM SIZE WIRE SHALL BE #12 UNLESS OTHERWISE INDICATED. ALL WIRING SHALL BE COLOR CODED.

EXERCISE CAUTION IN PULLING CONDUCTORS INTO RACEWAYS SO AS NOT TO DAMAGE THE INSULATION. CABLE PULLING LUBRICANT SHALL BE USED TO ASSIST IN PULLING.

CONDUCTOR WITHIN PANELBOARDS, JUNCTION BOXES, TROUGHS AND OTHER EQUIPMENT WHERE CONCENTRATIONS OF CONDUCTORS ARE ENCLOSED, SHALL BE NEATLY ARRANGED AND TIED WITH CABLE TIES.

CIRCUITS SHALL BE SO CONNECTED TO THE PANELBOARDS THAT THE TOTAL LOAD IS DISTRIBUTED AS NEATLY AS POSSIBLE, EQUALLY BETWEEN EACH LINE AND NEUTRAL. 10% WILL BE CONSIDERED A REASONABLE AND

BRANCH CIRCUIT WIRING FOR HVAC EQUIPMENMT AND RECEPETACLES IN DRYWALL CONSTRUCTION AND ACCESSIBLE HUNG CEILING SPACE, HOME-RUN CIRCUIT SHALL BE INSTALLED WITHIN EMT RACEWAY, BRANCH WIRING WITHIN PARTITIONS SHALL BE IN METAL SHEATHED 'MC' TYPE CABLE. CABLE SHALL BE SUPPORTED FROM STRUCTURE 4" O.C. WITH APPROVED CABLE SUPPORTS. PROVIDE APPROPRIATE GROMMETS FOR HORIZONTAL RUNS IN METAL STUD PARTITIONS. CABLE SHALL NOT LAY ON CEILING STRUCTURE OR TILES. PROVIDE ANTI-SHORT BUSHINGS (RED HEAD) UNDER ARMOR JACKET AT TERMINATIONS.

COMMON NEUTRAL FOR MULTIPLE BRANCH CIRCUITS IS NOT ACCEPTABLE. PROVIDE SEPARATE NEUTRAL FOR EACH

WIRING IN OUTLET BOXES, JUNCTION BOXES, CABINET PANELBOARDS OR EQUIPMENT SHALL HAVE A MINIMUM OF EIGHT (8") INCHES LENGTH LEADS FOR CONNECTING WIRING DEVICES TO MAKE UP CIRCUIT SPLICES.

PROVIDE FLEXIBLE METAL CONDUIT FOR DRY TYPE TRANSFORMER CONNECTIONS. LENGTH OF FLEXIBLE METAL CONDUIT DO NOT EXCEED THREE FEET (3').

## INSTALL COPPER GREEN INSULATED GROUNDING CONDUCTOR IN ALL CONDUITS AND RACEWAYS.

SPLICING SHALL BE DONE WITH INSULATED OR NON-INSULATED CONNECTORS OF APPROPRIATE TYPES AND CURRENT-CARRYING CAPACITY, NON-INSUALTED CONNECTORS SHALL BE WRAPPED WITH INSULATING TAPE TO THE THICKNESS OF THE INSULATION OF THE CONDUCTORS BEING SPLICED. ELECTRICAL TAPE SHALL BE 3M OR SUPER 88 SCOTCH VINYL FLAME-RETARDANT, COLD AND WEATHER RESISTANT.

SPLICES FOR CONDUCTORS, SIZES #10 AWG OR SMALLER SHALL BE MADE WITH U.L. LISTED SPRING-TYPE CONNECTORS OR APPROPRIATE CURRENT CARRYING CAPACITY.

SPLICES, TAPS AND TERMINALS FOR CONDUCTORS #8 AWG OR LARGER SHALL BE MADE WITH U.L. LISTED BOLTED PRESSURE CONNECTORS OF BRONZE OR COPPER CONSTRUCTION, OF APPROPRIATE CURRENT CARRYING CAPACITY. EQUAL TO O/Z GEDENY, BURNDY OR BLACKBURN.

# **CONDUCTOR IDENTIFICATION**

CONDUCTORS #8 AWG AND SMALLER SHALL HAVE A COLOR-CODED INSULATION.

CONDUCTORS #6 AWG AND LARGER SHALL BE IDENTIFIED WITH TAPES APPLIED NEAR THE ENDS OF THE CONDUCTORS.

FEEDERS AND BRANCH CIRCUIT CONDUCTORS SHALL BE IDENTIFIED FOR PHASE ROTATION.

# 120/240V/1PH

PHASE A	BLAC
PHASE B	RED
PHASE C	-
NEUTRAL	WHITI
GROUND	GREEI

ALL FEEDERS, MAINS AND BRANCH CIRCUIT CONDUCTORS SHALL BE TAGGED AT BOTH ENDS WITH WIRE MARKERS IN ALL PANELS, MOTOR CONTROLS, JUNCTION BOXES, OUTLET BOXES AND DEVICE BOXES.

# **IDENTIFICATION**

FURNISH AND INSTALL NAMEPLATES FOR ALL ELECTRICAL EQUIPMENT, IDENTIFYING ITEMS BY NAME, FUNCTION AND/OR CONTROL.

WITH ONE WHITE PLASTIC SHEET BONDED TO AND BETWEEN THE TWO OUTER BLACK SHEETS AND HAVING THE LETTERS ENGRAVED IN ONE BLACK TO THE DEPTH OF THE WHITE PLASTIC. FASTEN NAMEPLATES TO EQUIPMENT WITH SUITABLE ADHESIVES OR STAINLESS STEEL SCREWS.

IDENTIFYING NAMEPLATES SHALL BE LAMINATED, PLASTIC TYPE, CONSISTING OF TWO BLACK PLASTIC SHEETS

ALL PANELS SHALL HAVE TYPEWRITTEN CIRCUIT DIRECTORIES IDENTIFYING ALL BRANCH CIRCUITS. PROVIDE ADDITIONAL COPY OF COMPLETE UPDATED PANEL DIRECTORY TO FACILITY ENGINEERING.

WIRE MARKERS SHALL BE SECURELY ATTACHED AT BOTH ENDS, IDENTIFYING PANEL AND CIRCUIT BREAKER

USE PLASTIC-COATED WIRE MARKERS OF THE SELF-ADHESIVE. WRAPAROUND TYPE WITH PERMANENT FACTORY-PRINTED NUMBER, LETTERS AND SYMBOLS.

ALL CONDUCTORS SHALL BE PERMANENTLY TAGGED AT TIME OF INSTALLATION. LABELS SHALL BE EQUAL TO T&B, PANDUIT OR IDEAL.

ALL ELECTRICAL WORK SHALL BE GROUNDED AND BONDED IN FULL CONFORMANCE WITH THE LATEST APPROVED EDITION OF THE NATIONAL ELECTRICAL CODE AND LOCAL REQUIREMENTS.

ALL ELECTRICAL EQUIPMENT, PANELBOARD ENCLOSURES, MOTOR FRAMES, SAFETY SWITCHES, METAL ENCLOSURES, ELECTRICAL DEVICE CLOSURES AND ALL OTHER EQUIPMENT SHALL BE MADE TO FORM A CONTINUOUS CONDUCTING, GROUND PATH OF LOW IMPEDANCE FOR GROUND FAULT CIRCUITS AND OPERATION OF THE CIRCUIT PROTECTIVE DEVICES WITHIN EACH CIRCUIT.

## PROVIDE GROUNDING CONDUCTOR IN ALL RACEWAYS.

GROUND CONNECTIONS WITH THE GROUNDING CONDUCTORS SHALL BE MADE AT EACH OUTLET BOX, MOTOR AND OTHER EQUIPMENT COMPONENTS BY MEANS OF A POSITIVELY SECURED GROUNDING CLAMP, SCREW OR CLIP. CONNECTIONS TO GROUNDING RODS, OTHER GROUNDING ELECTRODE CONDUCTORS SHALL BE MADE WITH CADWELL TYPE, EXOTHEMIC WELD PROCESS UNLESS OTHERWISE NOTED. CONNECTIONS TO PIPES SHALL BE MADE WITH APPROVED BRONZE OR BRASS CLAMPS.

BONDING SHALL BE PROVIDED TO ASSURE ELECTRICAL CONTINUITY AND THE CAPACITY TO SAFELY CONDUCT ANY FAULT CURRENT LIKELY TO BE IMPOSED.

ALL DEVICES (DISCONNECTS, RECEPTACLES, ETC.), SHALL BE GROUNDED TO CONDUIT SYSTEM WITH SIX (6") INCH SOLID COPPER #12 AWG INSULATED WIRE (GREEN) CONNECTED TO GROUND SCREW IN DEVICE AND FASTENED TO BACKBOX WITH 10-32x3/8" SLOTTED HEXAGON HEAD WASHER FACE GROUND WITH GREEN DYE FINISH.

## SEISMIC RESTRAINT

SEISMIC LATERAL RESTRAINTS DESIGNED TO RESIST HORIZONTAL MOVEMENT IN ANY DIRECTIONS SHALL BE INSTALLED IN ALL SUSPENDED CONDUITS 2-1/2 INCHES IN DIAMETER OR GREATER. QUANTITY AND LOCATION OF THE LATERAL RESTRAINTS SHALL BE BASED ON THE CONDUIT SYSTEM LAYOUT AND IN GENERAL, SHALL BE INSTALLED AT CONDUIT BENDS, JUNCTION BOXES AND APPROXIMATELY EVERY 20 FEET ALONG CONDUIT RUNS SEISMIC LATERAL RESTRAINTS ARE NOT REQUIRED FOR ANY PIPING SUSPENDED BY INDIVIDUAL HANGERS 12 INCHES OR LESS IN LENGTH FROM TOP OF PIPING TO THE BOTTOM OF THE SUPPORT FOR THE HANGER.

### END OF ELECTRICAL SPECIFICATIONS

PROFESSIONAL SEAL



203 235 7146

ARCHITECT



www.girlsincmeriden.org

CHRISTOPHER WILLIAMS ARCHITECTS, LLC 85 Willow Street New Haven, CT 06511 203 776 0184 www.cwarchitectsllc.com

MEP ENGINEER



33 North Plains Industrial Rd Wallingford, CT 06492 203 467 4370 iesllc.biz

ENVIRONMENTAL CONSULTANT



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MARCH 12, 2024

MARK DATE DESCRIPTION

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SHEET TITLE

**ELECTRICAL** SPECIFICATIONS CONTINUED

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