CONSTRUCTION DOCUMENTS FOR:

MERRY HILL - MIDWAY VFD

109 NC-45, Merry Hill, North Carolina

CONSULTING ENGINEERING BY:

JEFF ROBINSON & ASSOCIATES, PC
P.O. Box 86
Emporia, VA 23847
Phone: (434) 634-6665
Cell: (434) 594-4073

PLUMBING & MECHANICAL ENGINEERING BY:

DS Engineering, PLLC
119 Sleepy Hollow Road
Camden, NC 27921
Phone: (252) 338-6782

STRUCTURAL ENGINEERING BY:

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115 Young Street
Henderson, NC 27536
Phone: (252) 438-8778

2018 APPENDIX B
BUILDING CODE SUMMARY FOR ALL COMMERCIAL PROJECTS

2018 APPENDIX B
BUILDING CODE SUMMARY FOR ALL COMMERCIAL PROJECTS
(PROVIDE ON THE STRUCTURAL SHEETS IF APPLICABLE)

2018 APPENDIX B
BUILDING CODE SUMMARY FOR ALL COMMERCIAL PROJECTS
(PROVIDE ON THE MECHANICAL SHEETS IF APPLICABLE)

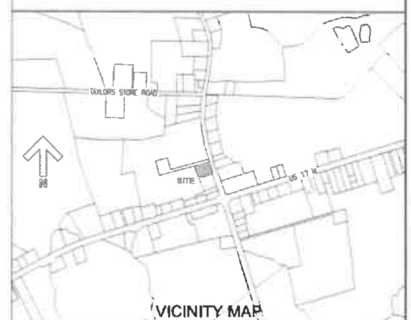
SEE PLANS

2018 APPENDIX B
BUILDING CODE SUMMARY FOR ALL COMMERCIAL PROJECTS
(PROVIDE ON THE ELECTRICAL SHEETS IF APPLICABLE)

SEE PLANS

ABBREVIATIONS

ACT	ACOUSTICAL CEILING TILE	LF	LINEAR FEET
AFF	ABOVE FINISH FLOOR	LVL	LAMINATED VENEER LUMBER
AHU	AIR HANDLER UNIT	MAS	MASONRY
ALUM	ALUMINUM	MC	MECHANICAL CONTRACTOR
ASSY	ASSEMBLY	MAX	MAXIMUM
BD	BOARD	MBM	MASONRY BENCH MARK
BLDG	BUILDING	MFR	MANUFACTURER
BRNG	BEARING	MISC	MISCELLANEOUS
BTM	BOTTOM	MIN	MINIMUM
BTWN	BETWEEN	MJ	MOVEMENT JOINT
CJ	CONTROL JOINT	MR	MOISTURE RESISTANT
CLG	CEILING	N	NORTH
CMU	CONCRETE MASONRY UNIT	NIC	NOT IN CONTRACT
CONC	CONCRETE	NOM	NOMINAL
CONT	CONTINUOUS	NTS	NOT TO SCALE
COORD	COORDINATE	OC	ON CENTER
CPT	CARPET	OH	OPPOSITE HAND
CRS	COURSE(S)	OPNG	OPENING
CT	CERAMIC TILE	OPP	OPPOSITE
℄	CENTERLINE	OS	OUTSIDE
DBL	DOUBLE	OSB	ORIENTED STRAND BOARD
DF	DRINKING FOUNTAIN	PC	PLUMBING CONTRACTOR
DIA	DIAMETER	PPT	PRESSURE PRESERVATIVE TREATED
DN	DOWN	REF	REFRIGERATOR or REFERENCE
DS	DOWNSPOUT	REQD	REQUIRED
DTL	DETAIL	R/W	RIGHT OF WAY
DW	DISHWASHER	RO	ROUGH OPENING
DWG	DRAWING	S	2x4 WOOD STUD
EA	EACH	SIM	SIMILAR
EC	ELECTRICAL CONTRACTOR	STRUCT	STRUCTURAL
EIFS	EXTERIOR INSULATION & FIN. SYS.	SPEC	SPECIFIED
EJ	EXPANSION JOINT	SPECS	SPECIFICATIONS
ELEC	ELECTRICAL	SAMF	SELF ADHERED MEMBRANE FLASHING
ELEV	ELEVATION	SDL	SIMULATED DIVIDED LITE
EQ	EQUAL	SHTG	SHEATHING
ETR	EXISTING TO REMAIN	STC	SOUND TRANSMISSION COEFFICIENT
EWC	ELECTRIC WATER COOLER	STD	STANDARD
EXIST	EXISTING	SUSP	SUSPENDED
ENGR	ENGINEER or ENGINEERED	SV	SHEET VINYL
EXT	EXTERIOR	TLT	TOILET
FC	FIRE CODE	TOS	TOP OF SLAB or TOP OF STEEL
FD	FIRE DAMPER or FLOOR DRAIN	TYP	TYPICAL
FE	FIRE EXTINGUISHER	UL	UNDERWRITERS LABORATORY
FEC	FIRE EXTINGUISHER CABINET	UNO	UNLESS NOTED OTHERWISE
FFE	FINISH FLOOR ELEVATION	VB	VAPOR BARRIER
FIN	FINISH or FINISHED	VCT	VINYL COMPOSITION TILE
FLR	FLOOR	WC	WATER CLOSET
FOB	FACE OF BEAM	W/	WITH
FOM	FACE OF MASONRY	WD	CLOTHES WASHER AND/OR DRYER
FOS	FACE OF STUD	WD	WOOD
FRT	FIRE RETARDANT TREATED	WH	WATER HEATER
GC	GENERAL CONTRACTOR	WRB	WEATHER RESISTIVE BARRIER
GA	GYPSUM ASSOCIATION	WSP	WOOD STRUCTURAL PANEL
GBG	GRILLE BETWEEN THE GLASS	WWF	WELDED WIRE FABRIC
GWB	GYPSUM WALL BOARD		
GYP	GYPSUM		
HDG	HOT DIPPED GALVANIZED		
HVAC	HEATING VENTILATION & AIR CONDITIONING		
INSUL	INSULATION or INSULATED		
INT	INTERIOR		
IS	INSIDE		
JST	JOIST		
LAV	LAVATORY		



VICINITY MAP

SCHEDULE OF DRAWINGS

T1.01	TITLE SHEET	P1.01	PLUMBING SPECS
LS1.01	LIFE SAFETY PLAN	P1.02	SANITARY PLUMBING PLAN
S1	FOUNDATION PLAN	P1.03	POTABLE WATER PLAN
B1.01	DEMOLITION PLAN	P1.04	PLUMBING DETAILS
B1.02	FLOOR PLAN	M1.01	HVAC SPECS
B2.01	ELEVATIONS	M1.02	HVAC PLAN
B3.01	BUILDING SECTION	M1.03	HVAC DETAILS
B4.01	SCHEDULES AND DIAGRAMS	E1	ELECTRICAL SCHEDULE & NOTES
		E2	ELECTRICAL DEMO PLANS
		E3	LIGHTING PLAN
		E4	POWER PLAN
		E5	PANEL, POWER RISER DIAGRAMS & DETAILS

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 18718
6-20-23

TITLE SHEET
MERRY HILL - MIDWAY VFD
109 NC 45
WINDSOR, NORTH CAROLINA

Revisions/Issue | Date

Drawn: CMM
Project No.: TBD
Date: 06/20/23
Plot Scale: N.T.S.
Sheet 1 of 7

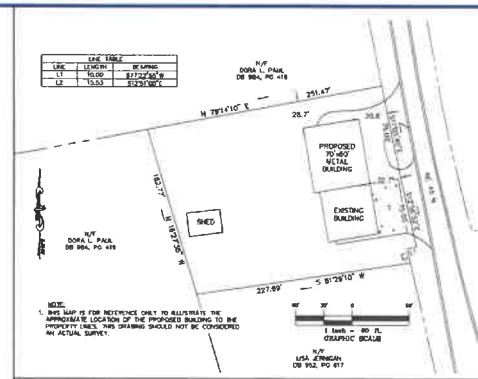
T1.01

LEGEND

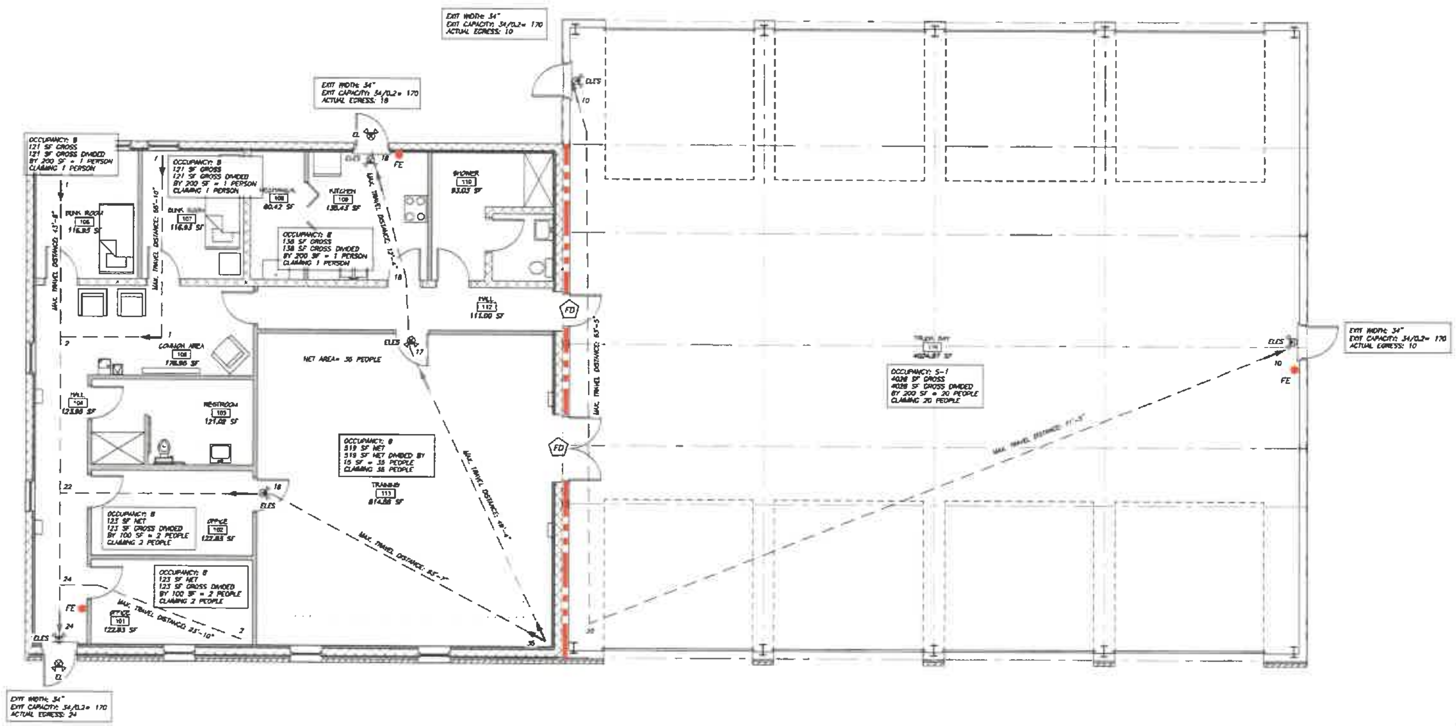
- ELES – EMERGENCY LIGHT AND LIGHTED EXIT SIGN
- EL – EMERGENCY LIGHT
- ● – FIRE EXTINGUISHER
- (FD) – FIRE DOOR
- ▬ ▪ ▪ ▬ – 2 HOUR FIRE BARRIER

NOTES

1. FINAL LOCATION OF FIRE EXTINGUISHERS SHALL BE LOCATED AS SHOWN OR AS DIRECTED BY LOCAL FIRE MARSHAL
2. EXIT SIGNAGE SHALL MEET REQUIREMENTS OF SECTION 1013 OF 2018 NC BUILDING CODE



SITE MAP



LIFE SAFETY PLAN

SEAL 18716

LIFE SAFETY PLAN

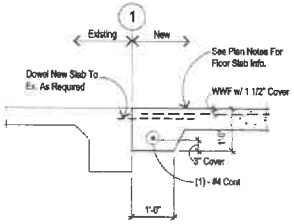
MERRY HILL - MIDWAY VFD
109 NC 45
WINDSOR, NORTH CAROLINA

Revisions/Issue	Date

Drawn: CMM
Project No.: TBD
Date: 06/20/23
Plot Scale: 3/16"=1'-0"

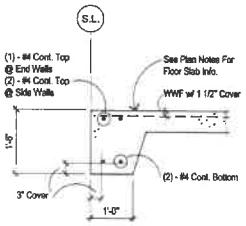
LS1.01

Sheet 2 of 7



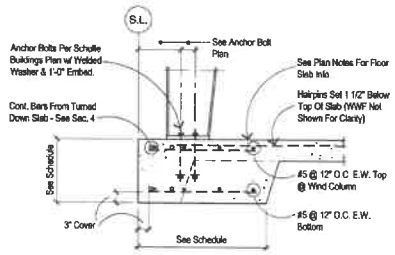
Section 5
Scale: 3/4" = 1'-0"

Typ. Exist. / New Slab Joint Detail



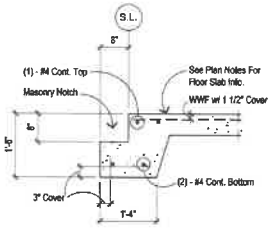
Section 4
Scale: 3/4" = 1'-0"

Typ. Turned Down Slab Edge



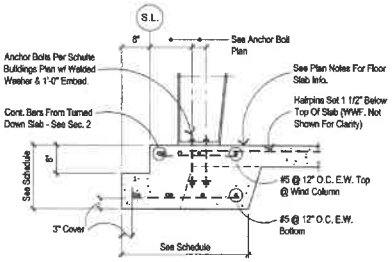
Section 3
Scale: 3/4" = 1'-0"

Typ. Column Footing



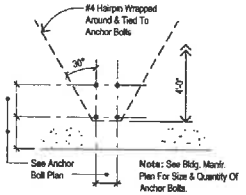
Section 2
Scale: 3/4" = 1'-0"

Typ. Turned Down Slab Edge w/ Brick Notch

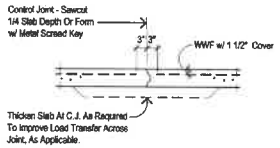


Section 1
Scale: 3/4" = 1'-0"

Typical Column Footing w/ Brick Notch

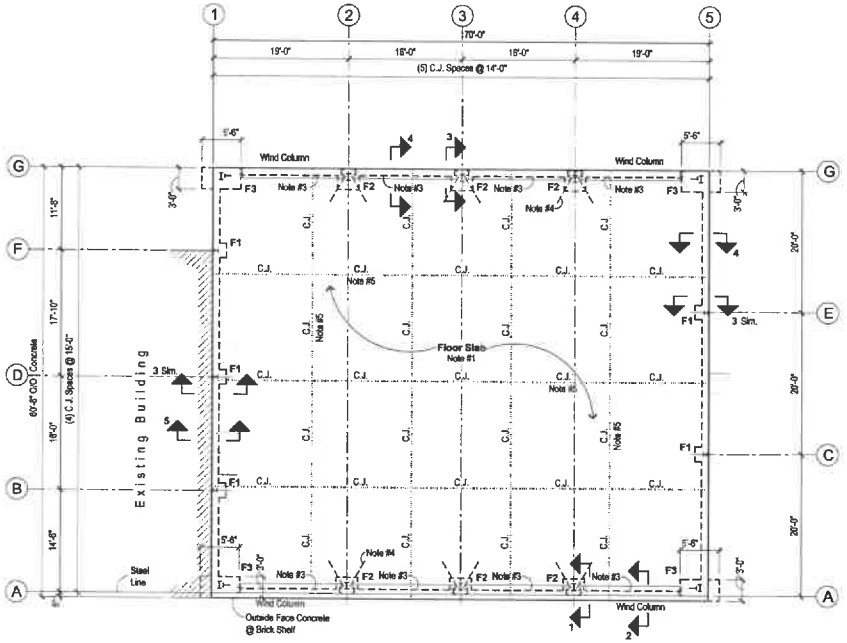


Typ. Hairpin Detail
Scale: 3/4" = 1'-0"



Typ. Slab C.J. Detail
No Scale

Notes:
1. Contractor shall use his judgment in selecting type of joint best suited for intended floor loading. For example, metal screed key joints not recommended for hard tired forklift traffic.
2. Sawcut joints must be cut ASAP and same day as pour.
3. Sawcut depth must account for thick slab as applicable.



Foundation Plan
Scale: 1/8" = 1'-0"

Structural Notes:
1. All work shall conform to the ACI-318 "Building Code Requirements for Reinforced Concrete", latest edition.
2. Do not scale from drawings. All dimensions shall be read or computed.
3. The foundation system has been designed based on loads furnished by Schulte Building Systems, Job # 033789, 03-21-2023. If there are any changes to the building that would affect column reactions, Contractor shall notify Engineer for re-evaluation of foundation design. Design loads are shown in table this sheet.
4. Footings have been designed for an ASSUMED allowable soil bearing pressure equal to 2,000 psf. Footings shall not be poured until the soil is approved as having the assumed bearing value by a Soils Engineer or local Building Official.
5. Building columns, base plates and anchor bolts shall be designed by the Building Manufacturer.
6. Work this drawing with the Anchor Bolt Setting Plan that is provided by the Building Manufacturer. Anchor bolt sizes, locations and projections shall be per the Anchor Bolt Setting Plan.
7. Concrete shall have a minimum 28 day compressive strength equal to 3,000 psi.
8. All concrete shall be a minimum six (6) bag mix per cubic yard with a maximum slump of 5 inches.
9. Reinforcing steel shall conform to ASTM A-615, grade 60, Fy= 60 ksi.
10. Welded wire fabric shall conform to ASTM A-185.
11. Welded wire fabric shall be furnished in mats.
12. Lap edges of welded wire fabric at least 8" in each direction.
13. Floor slab is designed for a uniform live load = 100 psf.

Footing Schedule:
F1	1'-6" D. x 2'-0" Sq. Soldier Column Footing. No Reinf. Steel is Required.
F2	1'-6" D. x 3'-0" Sq. Side Wall Column Footing w/ #5 @ 12" O.C. E.W.
F3	2'-0" D. x 3'-0" W. x 5'-6" L. Side Wall Column Footing @ Wind Column w/ #5 @ 12" O.C. E.W. T&B

Footing Design Loads: (Kips)
Footing	Down	Uplift	Lateral	Moment (K-Ft)
F1	--	--	--	--
F2	11.2	7.7	5.7	--
F3	32.5	38.8	5.7	80.0

Foundation Plan Notes:
1. Floor slab shall be 6" thick slab-on-grade w/ 6x6 - 8/8 WWF on 6 mil vapor barrier on 4" sand or gravel base. WWF shall be set 1 1/2" below T/Slab.
2. Provide (2) - #4 bars x 2'-0" long at all slab-on-grade re-entrant corners, as applicable. Bars shall be placed at center of slab, 3" from corner and 3" apart.
3. Provide "mesh" in floor slab at overhead doors, as required. See Anchor Bolt Plan by Building Manufacturer.
4. Provide #4 hairpins, as shown, wrapped around and tied to anchor bolts. Hairpins shall be set 1 1/2" below top of slab. See typical detail.
5. "CJ" denotes floor slab control / construction joint. Provide metal screed key or sawcut as shown on typical detail.

JRA Job #23-100

Foundation Plan

Merry Hill Midway VFD
109 NC Hwy. 45 N
Merry Hill, NC 27957

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 18716
6-5-23

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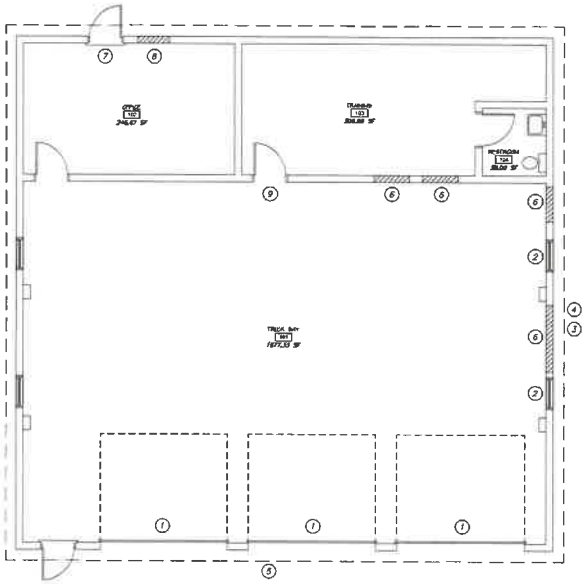
June 5, 2023

S1 of 1



DEMOLITION PLAN

N

DEMO NOTES

1. DEMOLISH EXISTING GARAGE DOOR. REBUILD PORTION OF WALL AND PREP FOR NEW WINDOW
2. DEMOLISH EXISTING WINDOW AND INFILL WALL
3. DEMOLISH EXISTING ROOF OVERHANG
4. DEMOLISH EXISTING LIGHT AND CAP ELECTRIC
5. DEMOLISH PORTION EXISTING CONCRETE SLAB, AS NECESSARY FOR BRICK VENEER
6. DEMOLISH PORTION OF EXISTING CMU WALL FOR DOOR INSTALLATION & INSTALL NEW PRECAST CMU LINTEL
7. DEMOLISH EXISTING DOOR AND INFILL WALL, AS NECESSARY FOR WINDOW INSTALL
8. DEMOLISH PORTION OF EXISTING CMU WALL FOR WINDOW INSTALLATION
9. DEMOLISH EXISTING DOOR AND INFILL EXISTING CMU WALL

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 18718

C-2043

DEMOLITION PLAN
MERRY HILL - MIDWAY VFD
109 NC 45
WINDSOR, NORTH CAROLINA

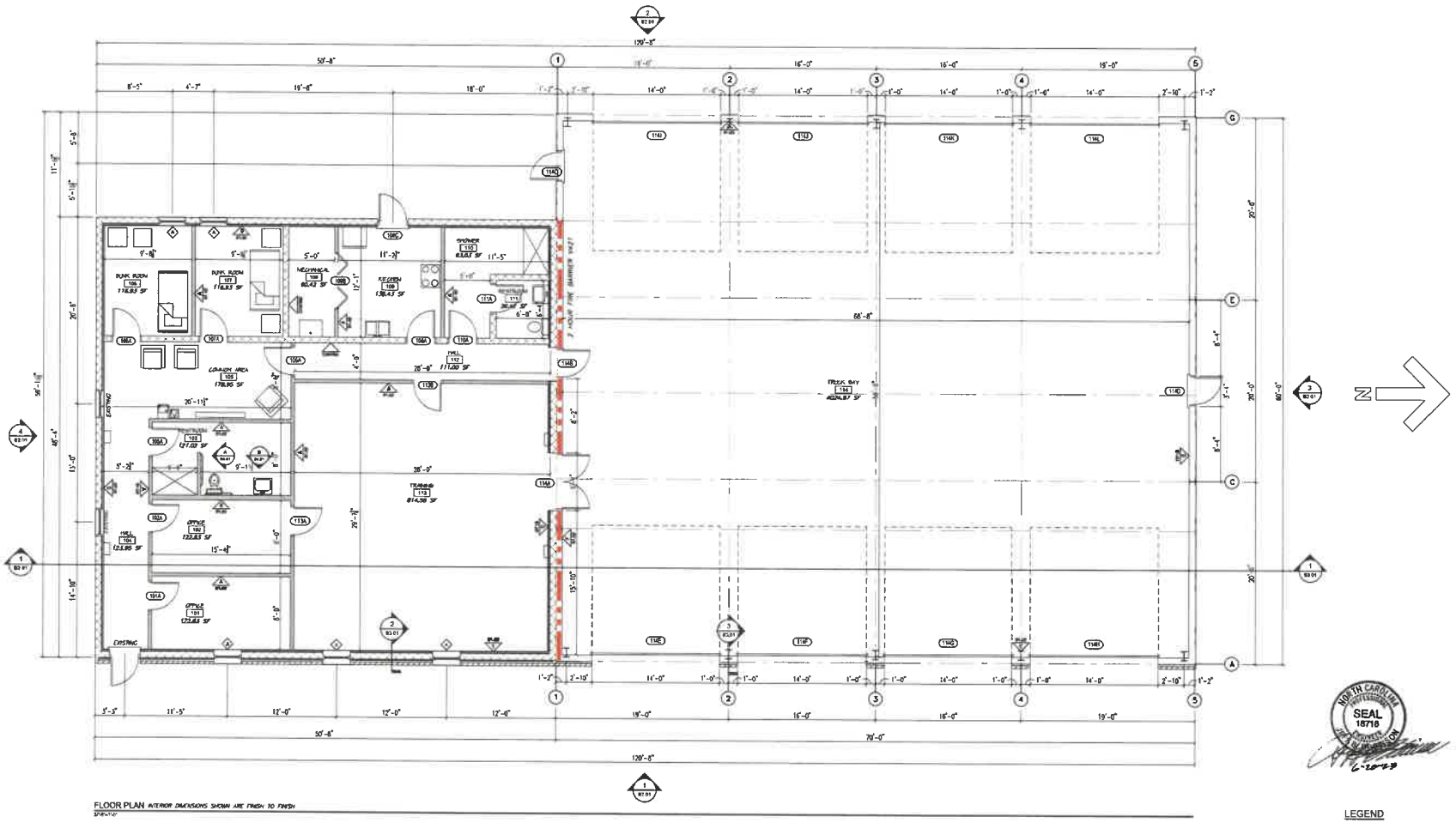
Revisions/Issue	Date

Drawn: CMM
Project No.: TBD
Date: 06/20/23
Plot Scale: 1/16"=1'-0"

B1.01

Sheet 3 of 7

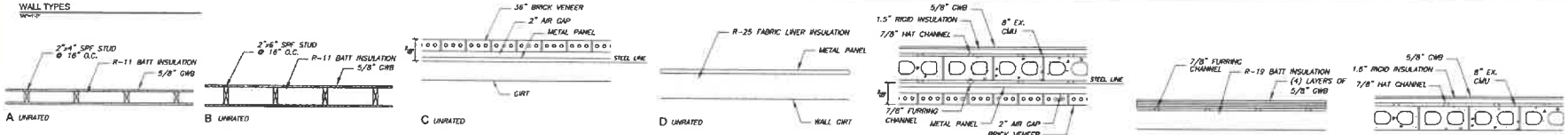
Plot Date: 06/26/23



LEGEND

- 2 HOUR FIRE BARRIER
- EXISTING WALL
- NEW WALL

WALL TYPES



NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 18718

FLOOR PLAN

MERRY HILL - MIDWAY VFD
109 NC 45
WINDSOR, NORTH CAROLINA

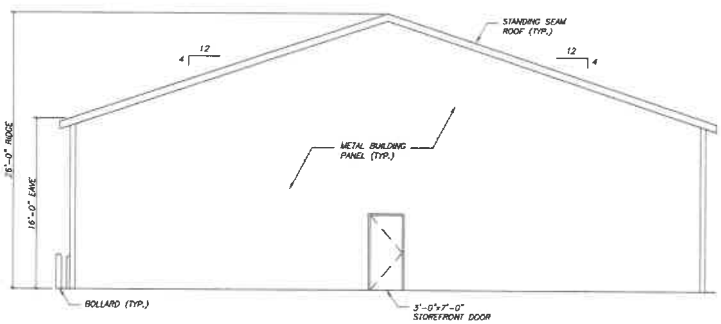
Revisions/Issue	Date

Drawn: CMM
Project No.: TBD
Date: 06/20/23
Plot Scale: 1/8"=1'-0"
Sheet 4 of 7

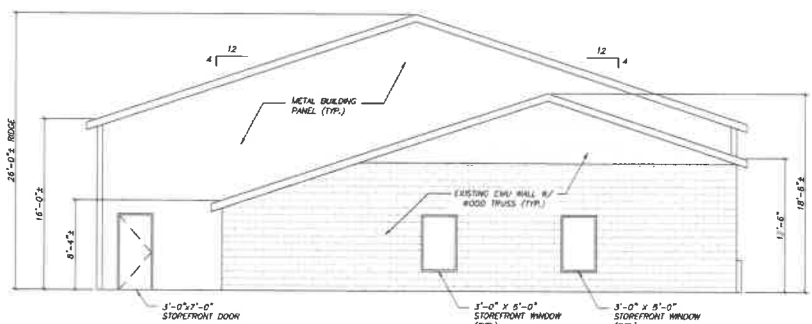
B1.02

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

2 EAST ELEVATION
3/16"=1'-0"



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



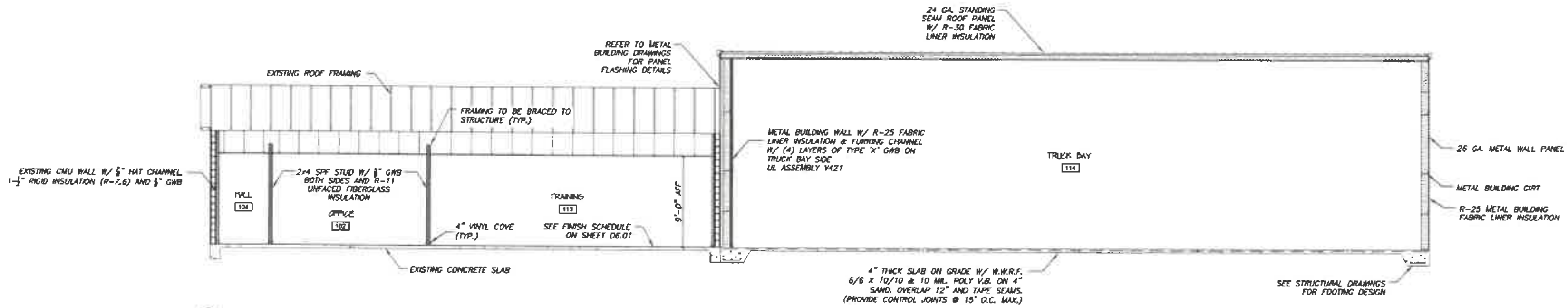
4 SOUTH ELEVATION
3/16"=1'-0"

NORTH CAROLINA
SEAL
18716
6-20-23

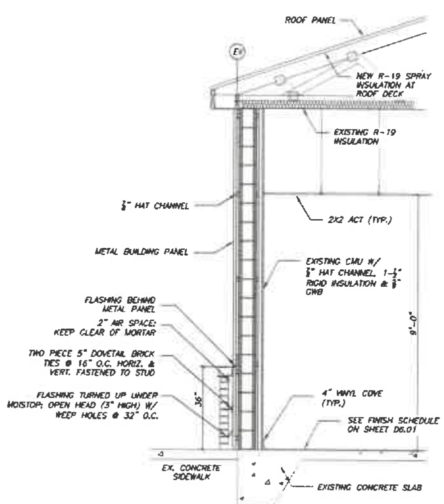
ELEVATIONS
MERRY HILL - MIDWAY VFD
109 NC 45
WINDSOR, NORTH CAROLINA

Revisions/Issue	Date

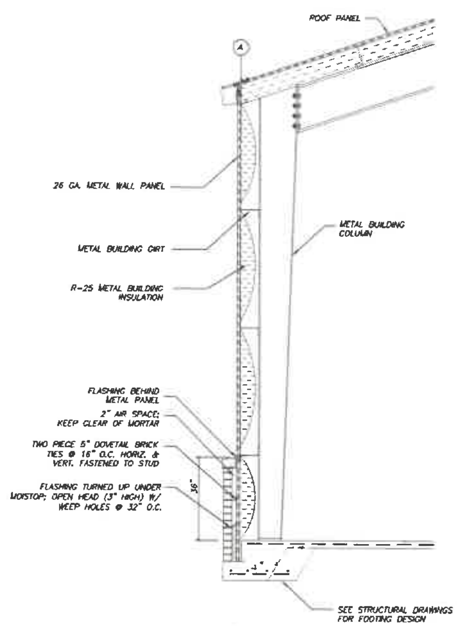
Drawn: CMM
Project No.: TBD
Date: 06/20/23
Plot Scale: 3/16"=1'-0"
B2.01
Sheet 5 of 7



1 BUILDING SECTION



2 WALL SECTION



3 WALL SECTION

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 18718
6-20-23

BUILDING & WALL SECTIONS
MERRY HILL - MIDWAY VFD
109 NC 45
WINDSOR, NORTH CAROLINA

Revisions/Issue	Date

Drawn: CMM
Project No.: TBD
Date: 06/20/23
Plot Scale: AS SHOWN
Sheet 6 of 7

B3.01

ROOM FINISH SCHEDULE

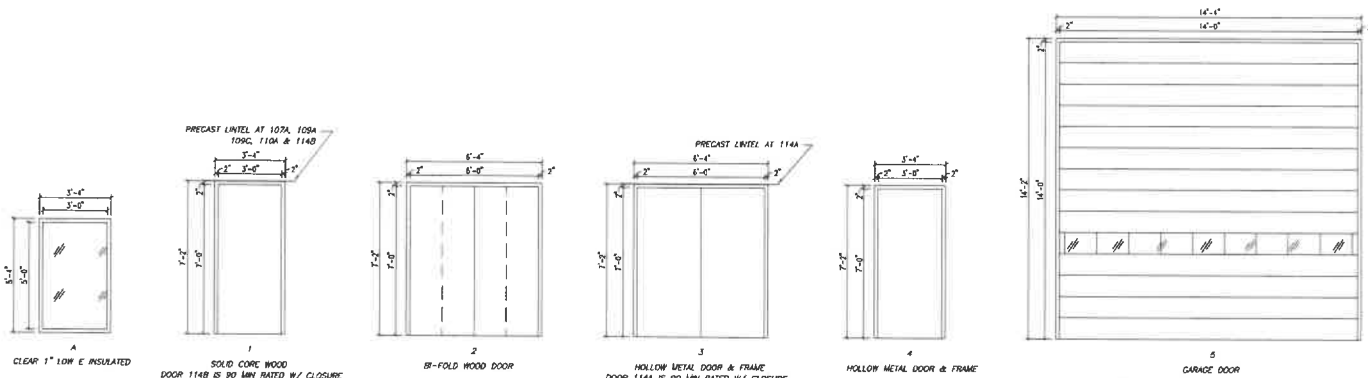
ROOM NO.	ROOM NAME	FLOOR		WALLS	CEILING		NOTES
		MATERIAL	BASE		MATERIAL	HEIGHT	
101	OFFICE	CARPET SQUARES	4" VINYL COVE	GWB	2X2 ACT	9'-0"	--
102	OFFICE	CARPET SQUARES	4" VINYL COVE	GWB	2X2 ACT	9'-0"	--
103	RESTROOM	LVT	4" VINYL COVE	FRP	2X2 ACT	9'-0"	--
104	HALL	CARPET SQUARES	4" VINYL COVE	GWB	2X2 ACT	9'-0"	--
105	COMMON AREA	CARPET SQUARES	4" VINYL COVE	GWB	2X2 ACT	9'-0"	--
106	BUNK ROOM	CARPET SQUARES	4" VINYL COVE	GWB	2X2 ACT	9'-0"	--
107	BUNK ROOM	CARPET SQUARES	4" VINYL COVE	GWB	2X2 ACT	9'-0"	--
108	MECHANICAL	CONCRETE	N/A	GWB	2X2 ACT	9'-0"	--
109	KITCHEN	LVT	4" VINYL COVE	GWB	2X2 ACT	9'-0"	--
110	SHOWER	LVT	4" VINYL COVE	FRP	2X2 ACT	9'-0"	--
111	RESTROOM	LVT	4" VINYL COVE	FRP	2X2 ACT	9'-0"	--
112	HALL	CARPET SQUARES	4" VINYL COVE	GWB	2X2 ACT	9'-0"	--
113	TRAINING	CARPET SQUARES	4" VINYL COVE	GWB	2X2 ACT	9'-0"	--
114	TRUCK BAY	SEALED CONCRETE	N/A	N/A	OPEN TO ROOF	OPEN	--

WINDOW SCHEDULE

MARK	QTY	SIZE		TYPE	MATERIAL	COLOR	NOTES
		WD	HGT				
A	5	3'-0"	5'-0"	STOREFRONT	ALUMINUM	WHITE	--

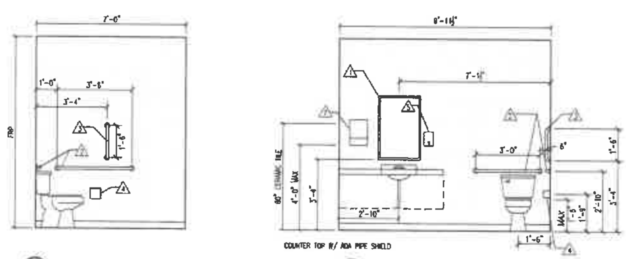
DOOR AND FRAME SCHEDULE

MARK	NAME	ELEVATION	DOOR						FRAME		HARDWARE		NOTES
			SIZE			MATERIAL	COLOR	GLAZING					
			WD	HGT	THK				MATERIAL	FINISH	SET NO.	KEY SIDE ROOM NO.	
101A	OFFICE	1	3'-0"	7'-0"	1 3/4"	SOLID CORE WOOD	TBD	N/A	WOOD	PAINT	--	104	
102A	OFFICE	1	3'-0"	7'-0"	1 3/4"	SOLID CORE WOOD	TBD	N/A	WOOD	PAINT	--	104	
103A	RESTROOM	1	3'-0"	7'-0"	1 3/4"	SOLID CORE WOOD	TBD	N/A	WOOD	PAINT	--	104	
105A	SITTING AREA	1	3'-0"	7'-0"	1 3/4"	SOLID CORE WOOD	TBD	N/A	WOOD	PAINT	--	112	
106A	BUNK ROOM	EXISTING	3'-0"	7'-0"	1 3/4"	SOLID CORE WOOD	TBD	N/A	WOOD	PAINT	--	105	EXISTING
107A	BUNK ROOM	1	3'-0"	7'-0"	1 3/4"	SOLID CORE WOOD	TBD	N/A	WOOD	PAINT	--	105	W/ PRECAST CMU LINTEL
109A	KITCHEN	1	3'-0"	7'-0"	1 3/4"	SOLID CORE WOOD	TBD	N/A	WOOD	PAINT	--	112	W/ PRECAST CMU LINTEL
109B	KITCHEN	2	6'-0"	7'-0"	1 3/4"	WOOD	TBD	N/A	WOOD	PAINT	--	109	
109C	KITCHEN	4	3'-0"	7'-0"	1 3/4"	HOLLOW METAL	TBD	N/A	HOLLOW METAL	PAINT	--	EXTERIOR	W/ PRECAST CMU LINTEL
110A	SHOWER	1	3'-0"	7'-0"	1 3/4"	SOLID CORE WOOD	TBD	N/A	WOOD	PAINT	--	112	W/ PRECAST CMU LINTEL
111A	RESTROOM	EXISTING	3'-0"	7'-0"	1 3/4"	SOLID CORE WOOD	TBD	N/A	WOOD	PAINT	--	110	EXISTING
113A	TRAINING	1	3'-0"	7'-0"	1 3/4"	SOLID CORE WOOD	TBD	N/A	WOOD	PAINT	--	113	
113B	TRAINING	1	3'-0"	7'-0"	1 3/4"	SOLID CORE WOOD	TBD	N/A	WOOD	PAINT	--	112	
114A	TRUCK BAY	3	6'-0"	7'-0"	1 3/4"	HOLLOW METAL	TBD	N/A	HOLLOW METAL	PAINT	--	114	90 MIN RATED W/ CLOSURE & PRECAST CMU LINTEL
114B	TRUCK BAY	1	3'-0"	7'-0"	1 3/4"	HOLLOW METAL	TBD	N/A	HOLLOW METAL	PAINT	--	114	90 MIN RATED W/ CLOSURE & PRECAST CMU LINTEL
114C	TRUCK BAY	4	3'-0"	7'-0"	1 3/4"	HOLLOW METAL	WHITE	N/A	HOLLOW METAL	PAINT	--	EXTERIOR	
114D	TRUCK BAY	4	3'-0"	7'-0"	1 3/4"	HOLLOW METAL	WHITE	N/A	HOLLOW METAL	PAINT	--	EXTERIOR	
114E	TRUCK BAY	5	14'-0"	14'-0"	1 3/4"	ALUMINUM	WHITE	GLASS PANEL	ALUMINUM	PAINT	--	EXTERIOR	
114F	TRUCK BAY	5	14'-0"	14'-0"	1 3/4"	ALUMINUM	WHITE	GLASS PANEL	ALUMINUM	PAINT	--	EXTERIOR	
114G	TRUCK BAY	5	14'-0"	14'-0"	1 3/4"	ALUMINUM	WHITE	GLASS PANEL	ALUMINUM	PAINT	--	EXTERIOR	
114H	TRUCK BAY	5	14'-0"	14'-0"	1 3/4"	ALUMINUM	WHITE	GLASS PANEL	ALUMINUM	PAINT	--	EXTERIOR	
114I	TRUCK BAY	5	14'-0"	14'-0"	1 3/4"	ALUMINUM	WHITE	N/A	ALUMINUM	PAINT	--	EXTERIOR	
114J	TRUCK BAY	5	14'-0"	14'-0"	1 3/4"	ALUMINUM	WHITE	N/A	ALUMINUM	PAINT	--	EXTERIOR	
114K	TRUCK BAY	5	14'-0"	14'-0"	1 3/4"	ALUMINUM	WHITE	N/A	ALUMINUM	PAINT	--	EXTERIOR	
114L	TRUCK BAY	5	14'-0"	14'-0"	1 3/4"	ALUMINUM	WHITE	N/A	ALUMINUM	PAINT	--	EXTERIOR	



WINDOW ELEVATIONS
3/8"=1'-0"

DOOR ELEVATIONS
3/8"=1'-0"



A RESTROOM VIEW

B RESTROOM VIEW

TOILET ACCESSORY SCHEDULE		
ITEM	DESCRIPTION	NOTES
1	24" X 36" PLATE GLASS MIRROR	
2	GRAB BARS (42" & 36") 1-1/2" DIA. W/ KNURLED GRIP	
3	GRAB BAR (18") 1-1/2" DIA. W/ KNURLED GRIP	
4	TOILET PAPER DISPENSER	
5	SOAP DISPENSER	
6	PAPER TOWEL DISPENSER	
7	ELECTRIC HAND DRYER	

NOTE:
1. ALL ACCESSORIES SHALL COMPLY WITH ANSI REQUIREMENTS AS PER MOUNTING HEIGHTS AND ALLOWABLE SIZES/ SPACING. SEE ELEVATIONS.
2. PROVIDED BLOCKING AS REQ'D TO SUPPORT ACCESSORIES.

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 18716
6-20-23

SCHEDULES AND DIAGRAMS
MERRY HILL - MIDWAY VFD
109 NC 45
WINDSOR, NORTH CAROLINA

Revisions/Issue	Date

Drawn: CMM
Project No.: TBD
Date: 06/20/23
Plot Scale: AS SHOWN

B6.01

Sheet 7 of 7

WATER HEATER SCHEDULE

MARK	FIXTURE	STORAGE (GAL.)	ELECTRICAL			FUEL	LOCATION	SEE DIAGRAM NO.	REMARKS
			VOLTS	PHASE	KW				
WH-1	WATER HEATER	INSTANTANEOUS	120	1	N/A	NG	EXTERIOR		RINNAI NON-CONDENSING TANKLESS (MODEL RE140e) Install IAW Manufacturer's Instructions

PLUMBING FIXTURE SCHEDULE

MARK	FIXTURE	MATERIAL	MTG. HGT.	PIPE SIZES				REMARKS
				W.	V.	HW.	CW.	
P-1	WATER CLOSET (ADA COMPLIANT)	VITREOUS CHINA	RIM @ 16-1/2" A.F.F.	3"	2"	-	1/2"	1.28 GPF GERBER MAXWELL ELONGATED TOILET - WHITE (OR EQUAL) ADA COMPLIANT W/ OPEN FRONT SEAT
P-2	LAVATORY VANITY (ADA COMPLIANT)	VITREOUS CHINA		1-1/2"	1-1/2"	1/2"	1/2"	LUCERNE WALL HUNG SINK - WHITE (OR EQUAL) W/TAIL PIECE AND TRAP AND SUPPLY WRAP PEERLESS CHROME SINGLE LEVER (OR EQUAL)
P-3	KITCHEN SINK	STAINLESS		2"	1-1/2"	1/2"	1/2"	KOHLER 33X22X8" DEEP DOUBLE BOWL SS SINK - 18 GA W/DELTA MODEL 9113-DST ESSA PULL-DOWN FAUCET (OR EQUAL)
P-4	MOP SINK	POLYETHYLENE		2"	1-1/2"	1/2"	1/2"	FIAT MODEL MSB2424 (OR EQUAL) W/FIAT FAUCET 830-AA (OR EQUAL)
P-5	ELECTRIC WATER COOLER	STAINLESS	-	1-1/2"	1-1/2"	-	3/4"	ELKAY BI-LEVEL (MODEL #EZSTL8LC OR EQUIV)
P-6	SHOWER	ACRYLIC	-	2"	1-1/2"	1/2"	1/2"	ONE PIECE (SIZE TBD BY OWNER) 1 HANDLE TEMPERATURE CONTROL VALVE WATTS MIX VALVE LFMMVM1-UT
P-7	HOSE BIBB			-	-	-	3/4"	PRIER MODEL P-164 1/4 TURN WALL HYDRANT

NOTE: ① ALL REQUIRED FIXTURES SHALL MEET THE A.D.A. ACCESSIBILITY STANDARDS FOR CONSTRUCTION, LOCATION, AND MOUNTING HEIGHTS.

② PROVIDE TRAP AND SUPPLY PIPE INSULATION GUARDS FOR ALL LAVATORIES AND SINKS INDICATED FOR USE BY THE DISABLED.

③ ALL PLUMBING FIXTURES SHALL BE WHITE UNLDESS STATED OTHERWISE.

WATER FIXTURE UNIT SUMMARY

FIXTURE	CW FIXT. UNIT	HW FIXT. UNIT	QUANTITY	TOTAL WATER FIXTURE UNITS
WATER CLOSET	2.2		2	4.4
LAVATORY	1.5	1.5	2	4
BREAK ROOM SINK	1	1	1	1.4
HOSE BIBB	2.5		3	4.5
SHOWER	3	3	2	8
MOP SINK	2.25	2.25	1	3
WATER FOUNTAIN	.25		2	.5

TOTAL WATER SUPPLY FIXTURE UNITS (LOAD) - 25.8
DEMAND - APPROX. 22 GPM
1-1/4" SERVICE PIPING FROM EXISTING METER TO BUILDING

ABBREVIATIONS

ABV	ABOVE	MECH	MECHANICAL
A.F.F.	ABOVE FINISHED FLOOR	MT'D	MOUNTED
A.F.G.	ABOVE FINISHED GRADE	NO.	NUMBER
CO	CLEAN OUT	SA:	SHOCK ABSORBER
CONT	CONTINUATION	TYP	TYPICAL
SD	SHOWER DRAIN	VTR	VENT THRU ROOF
FD	FLOOR DRAIN	WCO	WALL CLEAN OUT
GAL	GALLON	WH	WALL HYDRANT
HGT	HEIGHT		

P-1 DENOTES FIXTURE NUMBERS

DENOTES POINT OF DISCONNECTION

DENOTES NEW TO EXISTING CONNECTION

LEGEND

——V——	VACUUM PIPING
——CA——	COMPRESSED AIR PIPING
—·—·—	DOMESTIC COLD WATER PIPING - C.W. (NEW)
—··—	DOMESTIC HOT WATER PIPING - H.W. (NEW)
————	SANITARY WASTE PIPING - W. (NEW)
– – – –	SANITARY VENT PIPING - V. (NEW)
——O2——	OXYGEN PIPING
——N2O——	NOX PIPING
	GATE VALVE
	BALL VALVE
	BALANCING VALVE
	CHECK VALVE
	GATE VALVE IN RISER
	FLANGED PIPE CONNECTION
	PIPE UNION
	GAS PIPING

PLUMBING SPECIFICATIONS

1) WORK INCLUDES FURNISHING AND INSTALLING COMPLETE WORKING SYSTEMS, TESTED AND READY FOR OPERATION, COMPLETE WITH LABOR, MATERIAL, APPARATUS, TRANSPORTATION AND TOOLS REQUIRED FOR THE INSTALLATION IN CONFORMANCE WITH DRAWINGS, SPECIFICATIONS AND LATEST VERSION OF NC PLUMBING CODE.
2) THE WORD "PROVIDE" AS USED HEREINAFTER SHALL BE DEFINED TO MEAN THE FURNISHINGS OF LABOR, MATERIALS, EQUIPMENT AND SERVICES NECESSARY FOR THE WORK DESCRIBED.
3) COMPLY WITH ALL APPLICABLE CODES AND ORDINANCES.
4) SECURE AND PAY FOR ALL REQUIRED PERMITS AND INSPECTIONS.
5) CONTRACTOR SHALL GUARANTEE ALL PLUMBING WORK FOR A PERIOD OF ONE YEAR FROM DATE OF SUBSTANTIAL COMPLETION.
6) COORDINATE WORK CLOSELY WITH ALL TRADES.
7) KEEP ALL WORK AREAS CLEAN. CLEAN ALL EQUIPMENT, ETC., PRIOR TO FINAL PAINTING AND AT COMPLETION OF PROJECT.
8) DISINFECT THE NEW WATER PIPING IN ACCORDANCE WITH AWWA C651 OR C652. FILL THE PIPING SYSTEMS WITH SOLUTION CONTAINING MINIMUM OF 50 PARTS PER MILLION OF AVAILABLE CHLORINE AND ALLOW SOLUTION TO STAND FOR MINIMUM OF 24 HOURS. FLUSH THE SOLUTION FROM THE SYSTEM WITH CLEAN WATER UNTIL THE CHLORINE IS PURGED FROM THE SYSTEM.
9) BEFORE AND ACCEPTANCE OF THE WORK, TEST EACH SYSTEM AS IN SERVICE TO DEMONSTRATE COMPLIANCE WITH THE CONTRACT REQUIREMENTS. PERFORM THE TESTS AS SPECIFIED IN THE ICC INTERNATIONAL PLUMBING CODE. CORRECT ALL DEFECTS IN THE WORK PROVIDED BY THE CONTRACTOR, AND REPEAT THE TESTS UNTIL THE WORK IS IN COMPLIANCE WITH THE CONTRACT DOCUMENTS.
10) PROVIDE ALL LABOR, MATERIAL, AND EQUIPMENT REQUIRED FOR THE COMPLETION AND OPERATION OF ALL SYSTEMS IN THIS SECTION OF WORK IN ACCORDANCE WITH PLANS, SPECIFICATIONS AND ALL APPLICABLE STATE AND LOCAL CODES.
11) PROVIDE STANDARD MANUFACTURERED TYPE PIPE HANGARS.
12) PROVIDE PVC PIPE SLEEVES WHERE PIPE PASSES THROUGH MASONRY CONSTRUCTION OR CONCRETE FLOORS. PIPE SLEEVE SHALL BE SIZED IAW PLUMBING CODE.
13) APPLY INSULATION TO HOT AND COLD WATER PIPING. THICKNESS SHALL BE ½" FOR COLD WATER AND ¾" FOR HOT WATER PIPING. FLAME SPREAD SHALL BE LESS THAN 25 AND SMOKE DENSITY SHALL BE LESS THAN 50 AS TESTED IN ACCORDANCE WITH ASTM E-84. THERMAL CONDUCTIVITY SHALL BE NOT GREATER THAN 0.25 BTU-IN/HR FT 2 DEGREE F AT 75 DEGREES FAHRENHEIT MEAN TEMPERATURE.
14) UNDERGROUND SOIL AND WASTE PIPING, SIZE 6" AND SMALLER SHALL BE PVC SCHEDULE 40 TYPE DWV PIPE AND FITTINGS CONFORMING TO ASTM-D-2665.
15) ABOVE GROUND WASTE PIPING SHALL BE PVC, SCHEDULE 40 TYPE DWV PIPE AND FITTINGS AS APPROVED BY PLUMBING INSPECTOR.
16) ABOVE GROUND VENT PIPING SHALL BE PVC, SCHEDULE 40 DWV PIPE AND FITTINGS AS APPROVED BY PLUMBING INSPECTOR.
17) ALL PLUMBING SUPPLY PIPING UNDER THE SLAB SHALL BE ROLLED TYPE K COPPER OR PEX WITHOUT ANY JOINTS UNDER THE FLOOR.
18) SOLDER JOINTS (IF APPLICABLE) SHALL BE MADE WITH LEAD-FREE SOLDER AND NON-CORROSIVE FLUX. ACID CORE SOLDER IS NOT PERMITTED; CUT ENDS OF PIPE SQUARE; CLEAN ENDS OF PIPE AND INSIDE OF FITTINGS. JOINTS SHALL APPEAR NEAT NO WITH EXCESS SOLDER OR FLUX SHOWING.
19) ALL WASTE PIPING SHOWN ON PLANS SHALL BE CONCEALED BELOW SLAB OR IN INTERIOR WALLS.
20) KEEP ALL UNDERGROUND PIPING CLEAR OF FOOTINGS AND FOUNDATION. PROVIDE PIPE SLEEVES LARGE ENOUGH TO ALLOW FOR REQUIRED LATERAL MOVEMENT OF PIPES PASSING THROUGH MASONRY OR CONCRETE WALLS.
21) ALL CLEANOUTS SHOWN IN PAVED AREAS OR ON GRADE SHALL BE SET FLUSH IN A 24"X24"X6" THICK CONCRETE PAD.
22) ALL SANITARY CLEAN-OUTS SHALL BE SET FLUSH WITH EITHER FINISHED FLOOR, FINISHED WALLS OR FINISHED GRADE.
23) PROVIDE VACUUM BREAKERS ON ALL HOSE BIBBS AND THREADED FAUCET SPOUTS.
24) ALL PIPING SHALL BE NEW, CLEAN, AND FREE FROM SCALE AND DIRT AT TIME OF INSTALLATION.
25) BEFORE INSTALLATION AND ERECTION OF PIPING, ALL DIMENSIONS AND ROUTING SHALL BE VERIFIED IN FIELD.
26) ALL WATER PIPING LOCATED IN EXTERIOR WALLS OR ATTIC SPACES SHALL BE RUN ON ROOM SIDE OF WALL OR CEILING INSULATION.
27) CONTRACTOR SHALL COORDINATE LOCATION OF ALL PLUMBING PIPING WITH MECHANICAL AND ELECTRICAL EQUIPMENT.
28) INSTALL PIPING SO THAT ALL VALVES ARE ACCESSIBLE.
29) CONTRACTOR SHALL PROVIDE ROUGH-IN INTERCONNECTING PIPING, SUITABLE STOPS, AND FINAL CONNECTION AS REQUIRED FOR ALL EQUIPMENT PROVIDED BY OWNER AND/OR OTHERS.
30) ALL PIPING TO BE SUPPORTED ON MAXIMUM OF 5'-0" CENTERS.
31) ALL DRAINS (IF APPLICABLE) THAT REMOVE FLOOR WATER SHALL BE RECHECKED BY THE CONTRACTOR BEFORE THE SURROUNDING SLAB IS POURED.
32) ALL VALVES THAT ARE NOT ADJACENT TO THE FIXTURE OR APPLIANCE SHALL BE IDENTIFIED, INDICATING THE FIXTURE OR APPLIANCE SERVED.
33) PLUMBING CONTRACTOR SHALL COORDINATE LOCATION OF PLUMBING FIXTURES AND PIPING WITH OTHERS.

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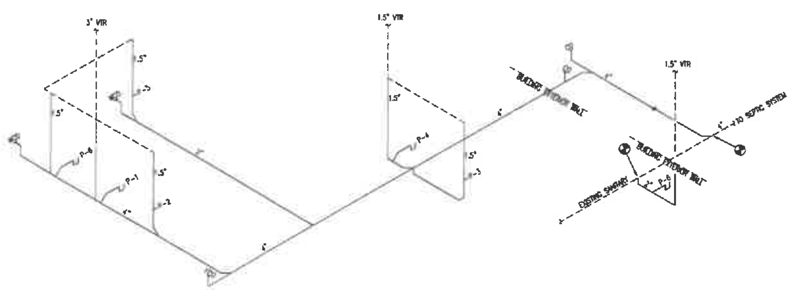
PLUMBING SPECS
MERRY HILL-MIDWAY VFD
109 NC 45
WINDSOR, NC

Revisions/Issue	Date

Drawn: DPA
Project No: TBD
Date: 6/11/23
Plot Scale: NTS
P1.01
Sheet 1 of 4

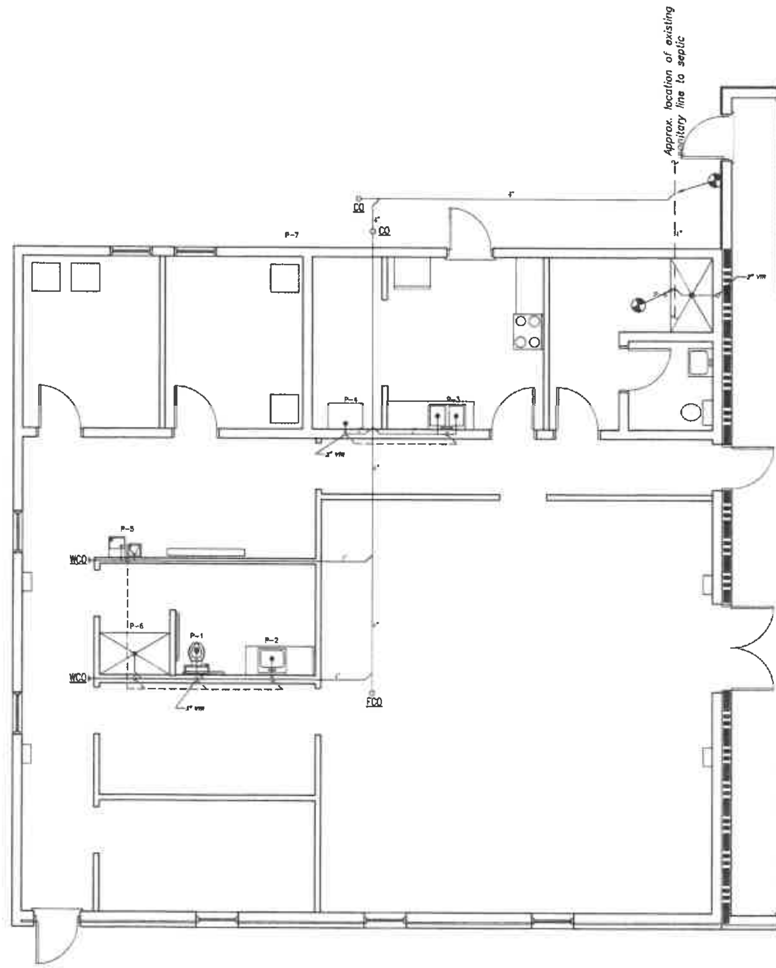
GENERAL NOTES

1) VERIFY LOCATIONS AND CONDITIONS BEFORE BID OR CONSTRUCTION.
2) THE CONTRACTOR IS RESPONSIBLE FOR DIMENSIONS, QUANTITIES AND COORDINATION WITH OTHER TRADES
3) THESE PLANS DEPICT A GENERALIZED BUILDING PLAN.
4) THESE DRAWINGS ARE PROVIDED AS AN AID TO THE CONTRACTOR. VERIFY ALL LOCATIONS AND EXISTANCE OF ITEMS SHOWN BEFORE CONSTRUCTION.
5) PLUMBING TO EXISTING BATHROOM FIXTURES (SINK AND WATER CLOSET) TO BE LEFT CONNECTED.



SANITARY ISOMETRIC PLAN

SCALE ~ NTS



SANITARY PLUMBING PLAN

SCALE ~ 1/4"=1 FOOT

6/11/23

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 30993 DAVID R AYDLETT

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SANITARY PLUMBING PLAN
MERRY HILL-MIDWAY VFD
109 NC 45
WINDSOR, NC

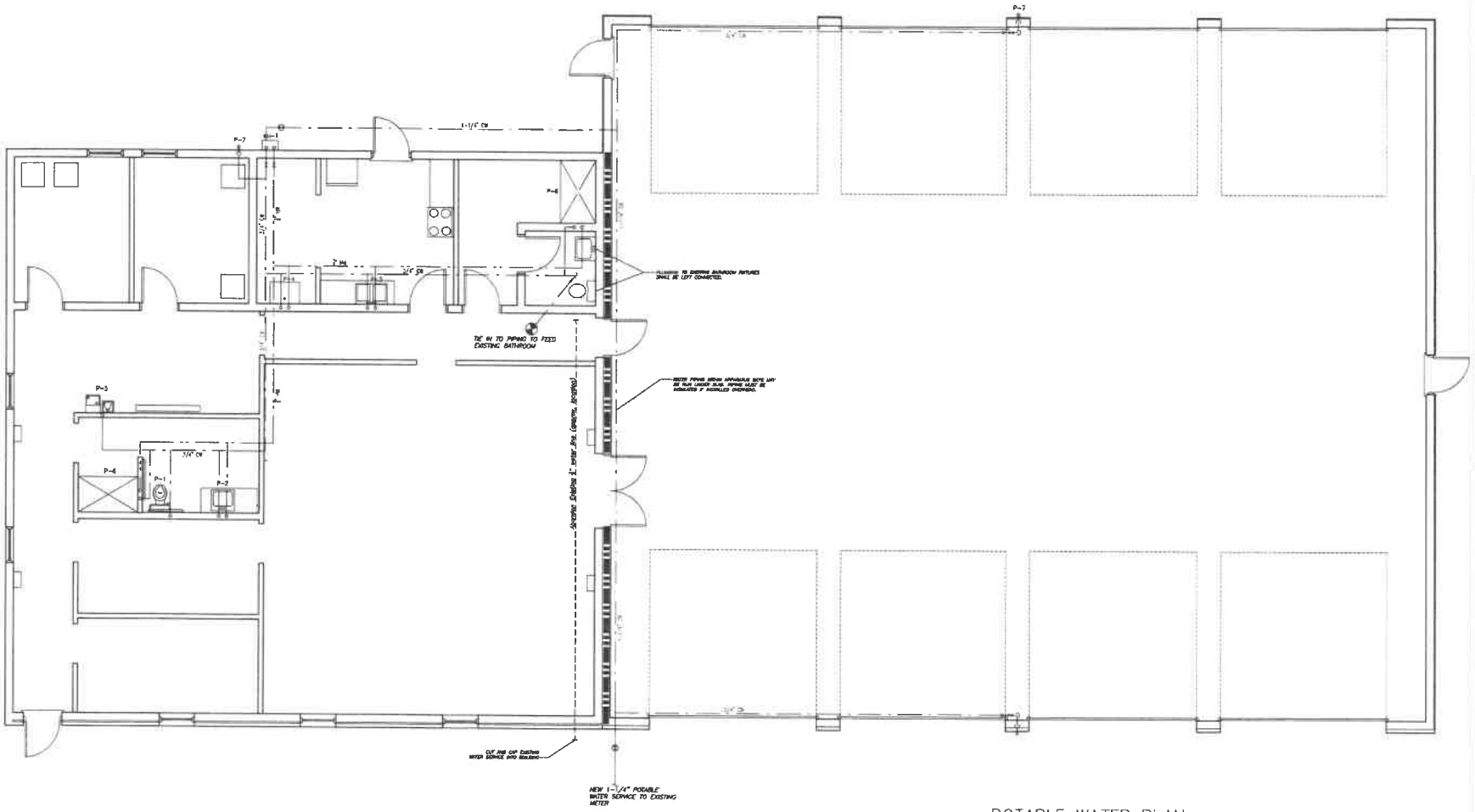
Revisions/Issue	Date

Drawn: DPA
Project No: TBD
Date: 6/11/23
Plot Scale: NTS
Sheet 2 of 4

P1.02

GENERAL NOTES

1) VERIFY LOCATIONS AND CONDITIONS BEFORE BID OR CONSTRUCTION.
2) THE CONTRACTOR IS RESPONSIBLE FOR DIMENSIONS, QUANTITIES AND COORDINATION WITH OTHER TRADES
3) THESE PLANS DEPICT A GENERALIZED BUILDING PLAN.
4) THESE DRAWINGS ARE PROVIDED AS AN AID TO THE CONTRACTOR. VERIFY ALL LOCATIONS AND EXISTANCE OF ITEMS SHOWN BEFORE CONSTRUCTION.
5) SUPPLY PLUMBING TO FIXTURES MAY BE RUN UNDER SLAB VS. OVERHEAD. THERE SHALL BE NO JOINTS UNDER SLAB.
6) PLUMBING TO EXISTING BATHROOM FIXTURES (SINK AND WATER CLOSET) TO BE LEFT CONNECTED.



POTABLE WATER PLAN

SCALE - 1/4"=1 FOOT

6/8/23

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POTABLE WATER PLAN
MERRY HILL-MIDWAY VFD
109 NC 45
WINDSOR, NC

Revisions/Issue	Date

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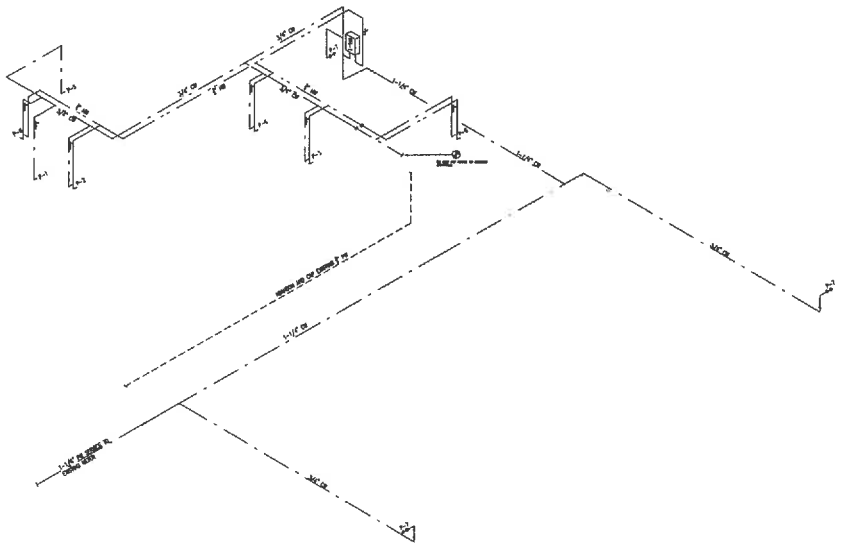
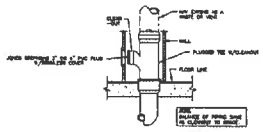
Project No: TRD
Date: 6/11/23
Plot Scale: NTS
Sheet 3 of 4

P1.03



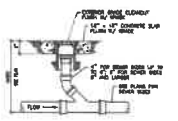
POTABLE WATER ISOMETRIC PLAN

SCALE - NTS



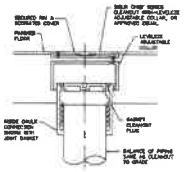
WALL CLEANOUT DETAIL

NOT TO SCALE



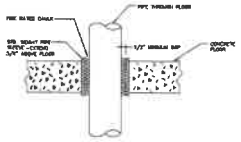
EXTERIOR GRADE CLEANOUT DETAIL

NOT TO SCALE



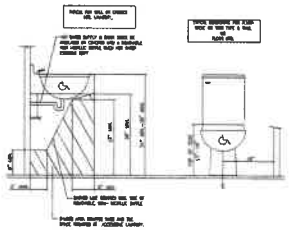
FLOOR CLEANOUT DETAIL

NOT TO SCALE



PIPE SLEEVE THROUGH FLOOR DETAIL

NOT TO SCALE



HANDICAP PLUMBING FIXTURE INSTALLATION

NOT TO SCALE

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6/11/23

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PLUMBING DETAILS

MERRY HILL - MIDWAY VFD
109 NC 45
WINDSOR, NC

Revisions/Issue	Date

Drawn: DPA
Project No.: TBD
Date: 6/11/23
Plot Scale: NTS
Sheet 4 of 4

P1.04

GENERAL

1. INSTALLATION SHALL BE IAW 2018 NC MECHANICAL CODE AND CONFORM WITH ALL APPLICABLE LAWS, CODES, AND REGULATIONS OF MUNICIPAL AND ALL ESTABLISHED TRADE STANDARDS.
2. THE CONTRACTOR SHALL PROVIDE ALL LABOR AND EQUIPMENT REQUIRED TO BALANCE ALL AIR SYSTEMS IN ACCORDANCE WITH QUANTITIES SHOWN. A BALANCE REPORT SHALL BE PROVIDED AFTER ALL TESTING AND BALANCING IS COMPLETE.
3. ALL EXTERIOR OPENINGS TO BE PROPERLY CAULKED AND SEALED WITH A SEALANT OF HIGH QUALITY AND LONG LIFE, TO PREVENT INFILTRATION OF OUTSIDE AIR INTO CONDITIONED SPACE.
4. COORDINATE INSTALLATION OF ALL ROOF FLASHING AT ROOF PENETRATION (IF APPLICABLE).
5. WHERE CONDUIT, CABLES, DUCTWORK OR PIPING PASSES THROUGH FIRE RATED FLOORS OR WALLS, THE SLEEVES SHALL BE COMPLETELY SEALED WITH A FIRE STOP MATERIAL THAT IS UL LISTED.
6. LOCATE THERMOSTATS @ 4'0" A.F.F. IN LOCATION INDICATED ON PLANS. THERMOSTATS SHALL BE 7-DAY PROGRAMMABLE.
7. BACK UP DRAIN PAN (IF APPLICABLE) SHALL BE INSTALLED UNDER AIR HANDLING UNITS AND SHALL BE SIZED SO THAT IT EXTENDS A MINIMUM OF 2" OUTSIDE OF PERIMETER OF HVAC UNIT. IN ADDITION TO A PRIMARY DRAIN FROM THE UNIT, A SECONDARY DRAIN LINE SHALL BE INSTALLED FROM DRAIN PAN TO EXTERIOR. IN ADDITION TO SECONDARY DRAIN LINE, A FLOAT SWITCH SHALL BE INSTALLED IN PAN TO SHUT DOWN SYSTEM WHEN WATER LEVEL RISES IN DRAIN PAN.

REFRIGERANT & CONDENSATE

1. CONTRACTOR SHALL PROVIDE AND INSTALL REFRIGERANT PIPING IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS AND IN SUCH A WAY AS TO BE INCONSPICUOUS AND FREE FROM ANY POSSIBLE CONDENSATION.
2. REFRIGERANT PIPING SHALL BE TYPE L OR TYPE ACR DRAWN COPPER TUBING OR PRECHARGED TUBING SETS WITH WROUGHT COPPER FITTINGS SUITABLE FOR CONNECTION WITH SILVER SOLDER. INSTALL REFRIGERANT PIPING IN ACCORDANCE WITH MANUFACTURER RECOMMENDATIONS, ASHRAE STANDARD 15, AND ARI STANDARDS.
3. CONDENSATE PIPING SHALL BE TYPE "L" COPPER FOR HORIZONTAL RUNS WHERE SUBJECT TO PHYSICAL DAMAGE AND MAY CHANGE TO SCHEDULE 40 PVC PIPE WITH SOLVENT JOINTS FOR VERTICAL RUNS. PITCH HORIZONTAL LINES 1" IN 10'-0". CONDENSATE DRAINS WITHIN UNCONDITIONED SPACES (I.E. ATTIC SPACES) SHALL BE INSULATED. SHALL BE ROUTED TO OUTSIDE OF BUILDING.
4. PIPING HANGERS SHALL BE SPACED SO AS TO PREVENT SAG AND PERMIT PROPER DRAINAGE AND SHALL NOT BE SPACED MORE THAN EIGHT FEET APART UNLESS A GREATER SPACE IS DEFINITELY INDICATED ON THE DRAWINGS. PLASTIC PIPING TO BE SUPPORTED EVERY 4 FEET. A HANGER SHALL BE PLACED WITHIN 2 FOOT OF EACH HORIZONTAL ELBOW.
5. PROVIDE ALL NECESSARY TEMPORARY OR PERMANENT CAPS OR PLUGS FOR PIPING. DO NOT LEAVE PIPING OPEN ENDED.

INSULATION

1. ALL INSULATION SHALL HAVE A FLAME SPREAD RATING OF 25 OR LESS AND A SMOKE DEVELOPED RATING OF 50 OR LESS IN ACCORDANCE WITH ASTM E84 AND NFPA 90A.
2. ALL CONCEALED DUCTWORK SHALL BE INSULATED.
3. WRAPPED INSULATION ON RECTANGULAR DUCTWORK SHALL BE MINIMUM 3 INCH THICK (R8) GLASS FIBER FLEXIBLE DUCT INSULATION, ONE POUND DENSITY WITH UL APPROVED FOIL SCRIM KRAFT FNJ JACKET. TAPE ALL JOINTS.
4. WRAPPED INSULATION ON ROUND DUCTWORK SHALL BE MINIMUM 3 INCH THICK (R8) GLASS FIBER WITH LAMINATED KRAFT-FOIL VAPOR BARRIER 2PC COMPLYING WITH FIRE CLASSIFICATION REQUIREMENTS OF NFPA 90A AND 90B.
5. REFRIGERATION SUCTION SHALL BE INSULATED WITH MINIMUM 1" INCH THICK ARMSTRONG "ARMAFLEX" OR EQUAL. EXTERIOR INSULATION SHALL BE COATED WITH ULTRAVIOLET RESISTANT MATERIAL IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS. DO NOT INSULATE THE LIQUID LINE.
6. ALL INTERIOR CONDENSATE DRAIN PIPING SHALL BE INSULATED WITH MINIMUM ½" ARMAFLEX OR EQUAL.
7. ALL SUPPLY DIFFUSERS SHALL BE PROVIDED WITH THERMAL BLANKET.

DUCTWORK

1. THE DUCTWORK SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE "SMACNA" APPLICABLE MANUALS. ALL DUCTWORK SHALL BE THE LOW VELOCITY TYPE, UNLESS SPECIFIED OTHERWISE.
2. ALL DUCTWORK AND OTHER SHEET METAL WORK SHALL BE GALVANIZED SHEET STEEL, UNLESS OTHERWISE NOTED. DUCT SYSTEMS TO BE 2" WG PRESSURE CLASS.
3. ALL DUCT JOINTS TO BE SEALED IN ACCORDANCE WITH "SMACNA" STANDARDS AND ACCEPTED GOOD PRACTICE.
4. SMOOTH TURN RADIUS DUCTWORK OR TURNING VANES SHALL BE USED THROUGHOUT WHERE FLOW EXCEEDS 250 CFM. ALL 90 DEGREE FITTINGS SHALL HAVE A CENTERLINE RADIUS OF 1.5 X DUCT DIAMETER.
5. ALL BRANCH DUCTS TO HAVE VOLUME DAMPERS. MANUAL VOLUME DAMPERS SHALL BE GALVANIZED STEEL PER SMACNA WITH LEVER AND LOCKSCREW. LEVERS MUST BE ACCESSIBLE
6. FLEXIBLE DUCTWORK SHALL BE RATED CLASS 1, WHEN TESTED UNDER THE REQUIREMENTS OF UL 181. FLEXIBLE DUCT SHALL NOT EXCEED 10 FEET IN LENGTH. PREINSULATED WITH MINIMUM 3 INCH THICK (R3) FIBERGLASS INSULATION WITH FOIL FACED JACKET. FLEXIBLE DUCTWORK CONNECTIONS SHALL BE PROPERLY SECURED WITH NYLON BANDS AND TAPE.
7. HVAC UNIT FLEXIBLE DUCT CONNECTIONS SHALL BE SECURELY ATTACHED TO PREVENT ANY LEAKAGE AT THE CONNECTION POINTS. FLEXIBLE CONNECTIONS SHALL BE FABRICATED FROM APPROVED FLAME PROOF FABRIC CONFORMING TO NFPA 90A. A FLEXIBLE DUCT CONNECTION SHALL BE USED IN EACH SUPPLY AND RETURN DUCT WORK CONNECTION AT AIR HANDLING UNIT.
8. ACCESS DOORS SHALL BE PROVIDED IN DUCTWORK WHEREVER CONTROLS, CONTROL DAMPERS, FIRE DAMPERS, COILS, & INSTRUMENTS ARE INSTALLED.
9. ALL DUCT DIMENSIONS SHOWN ARE NET INSIDE VALUES. DIMENSIONS MAY BE CHANGED SO LONG AS THE NET FREE CROSS SECTIONAL AREA IS MAINTAINED.

GAS PIPING

1. ALL GAS PIPING SHALL BE SIZED AND INSTALLED IAW 2018 N.C. FUEL GAS CODE.
2. GAS PIPING SHALL BE GALVANIZED CARBON STEEL WITH MALLEABLE IRON FITTINGS. PIPING SHALL BE MINIMUM SCHEDULE 40 AND COMPLY WITH ASME B36.10, ASTM A53/A53M, OR ASTM A106.
3. GAS PIPING SHALL BE LABELED "GAS" AND "ASTM D 2513". THE LABELS SHALL BE SPACED AT INTERVALS NOT EXCEEDING 5 FEET.
4. WHERE PIPING CONNECTS TO EQUIPMENT, IT SHALL BE PROVIDED WITH A DRIP LEG THE FULL SIZE OF THE RUN-OUT, A 100% SHUT OFF VALVE AND UNION.
5. PRESSURE REGULATORS THAT REQUIRE A VENT SHALL BE VENTED DIRECTLY TO THE OUTDOORS THROUGH EXTERIOR WALL.
6. ALL PIPING SHALL BE INSPECTED AND PRESSURE TESTED. TEST MEDIUM CAN BE AIR, NITROGEN, CARBON DIOXIDE, OR INERT GAS. THE TEST PRESSURE SHALL BE AT LEAST 1-1/2 TIMES THE MAXIMUM WORKING PRESSURE BUT NOT LESS THAN 3 PSI. THE TEST DURATION SHALL NOT BE LESS THAN 30 MINUTES.

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LICENSE P-1434

MECHANICAL SYSTEMS, SERVICE SYSTEMS AND EQUIPMENT

METHOD OF COMPLIANCE
PRESCRIPTIVE X ENERGY COST BUDGET

CLIMATE ZONE 4

THERMAL ZONE
WINTER DRY BULB 19
SUMMER DRY BULB 93

INTERIOR DESIGN CONDITIONS
WINTER DRY BULB 72
SUMMER DRY BULB 75
RELATIVE HUMIDITY 50

BUILDING HEATING LOAD (MBH) 134

BUILDING COOLING LOAD (MBH) 50

MECHANICAL SPACING CONDITIONING SYSTEM
UNITARY

DESCRIPTION OF UNIT	SEE SCHEDULES
HEATING EFFICIENCY	SEE SCHEDULES
COOLING EFFICIENCY	SEE SCHEDULES
HEAT OUTPUT OF UNIT	SEE SCHEDULES
COOLING OUTPUT OF UNIT	SEE SCHEDULES
LIST EQUIPMENT EFFICIENCIES	SEE SCHEDULES

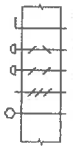
EQUIPMENT SCHEDULES WITH MOTORS (MECHANICAL SYSTEMS)

MOTOR HORSEPOWER	SEE SCHEDULES
NUMBER OF PHASES	SEE SCHEDULES
MINIMUM EFFICIENCY	SEE SCHEDULES
MOTOR TYPE	SEE SCHEDULES
# OF POLES	SEE SCHEDULES

DESIGNER'S STATEMENT:
TO THE BEST OF MY KNOWLEDGE AND BELIEF, THE DESIGN OF THIS BUILDING COMPLIES WITH THE MECHANICAL SYSTEMS, SERVICE SYSTEMS AND EQUIPMENT REQUIREMENTS OF THE N.C.S. ENERGY CODE.

SIGNED: David P. Aydlett

NAME: DAVID P. AYDLETT, PE



DAMPERS
- MANUAL VOLUME DAMPER (MVD)
- MOTOR OPERATED DAMPER (MOD)
- CONTROL DAMPER - OPPOSED BLADE
- CONTROL DAMPER - PARALLEL BLADE
- BACKDRAFT DAMPER
- FIRE DAMPER

CONTROLS
- THERMOSTAT & UNIT SERVED
- THERMOSTAT WITH HUMIDISTAT
- HUMIDISTAT
- SMOKE DETECTOR - DUCT MOUNTED
- CO2 SENSOR & UNIT SERVED

GRILLS, REGISTERS, DIFFUSERS
- AIR DEVICE TO BE REMOVED
- CEILING SUPPLY AIR DIFFUSER
- SIDEWALL SUPPLY AIR REGISTER
- CEILING RETURN AIR REGISTER
- SIDEWALL RETURN AIR REGISTER

GAS SIZING CALCULATIONS

DIFFUSER AND GRILLE SCHEDULE

AIR COOLED CONDENSING UNIT SCHEDULE

EXHAUST FAN SCHEDULE

GAS FIRED UNIT HEATER SCHEDULE

AIR HANDLING UNIT SCHEDULE

LOUVER SCHEDULE

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HVAC SPECS & SCHEDULE

MERRY HILL – MIDWAY VFD
109 NC 45
WINDSOR, NORTH CAROLINA

Revisions/Issue	Date

Drawn DPA
Project No. TBD
Date 6/11/23
Plot Scale: Sheet 1 of 3
NTS

M1.01

GENERAL NOTES

1) VERIFY LOCATIONS AND CONDITIONS BEFORE BID OR CONSTRUCTION.
2) THE CONTRACTOR IS RESPONSIBLE FOR DIMENSIONS, QUANTITIES AND COORDINATION WITH OTHER TRADES
3) THESE PLANS DEPICT A GENERALIZED BUILDING PLAN.
4) THESE DRAWINGS ARE PROVIDED AS AN AID TO THE CONTRACTOR. VERIFY ALL LOCATIONS AND EXISTANCE OF ITEMS SHOWN BEFORE CONSTRUCTION.
5) OUTSIDE AIR REQUIREMENTS FOR AREAS SHALL BE PROVIDED IAW MECHANICAL SCHEDULE.
6) EXACT LOCATION OF EXHAUST AND INTAKE EXTERIOR PENETRATIONS SHALL BE COORDINATED TO MEET MINIMUM SEPARATION DISTANCE OF 10' PER CODE.

FIRE STATION APPARATUS BAYS VENTILATION AND HEATING CONTROL SEQUENCE.

1) WHEN CARBON MONOXIDE AND/OR NITROGEN DIOXIDE MONITOR REACHES ALARM LEVEL, RELAY SHALL ENERGIZE EF-5 AND DEENERGIZE UNIT HEATERS.
2) WHEN ANY DOOR IS OPEN, EF-5 SHOULD BE ENERGIZED AND UNIT HEATERS SHALL BE DEENERGIZED.
3) A MANUAL OVERRIDE SWITCH SHALL BE INSTALLED TO OPERATE EF-5. WHEN SWITCH IS IN OFF POSITION, THE UNIT HEATERS WILL BE ALLOWED TO OPERATE. WHEN MANUAL OVERRIDE SWITCH IS IN ON POSITION, THE UNIT HEATERS SHALL BE OFF.
4) INTAKE LOUVER (LV-1) SHALL BE INTERLOCKED WITH EF-5 AND OPENED WHEN EF-5 IS OPERATIONAL.

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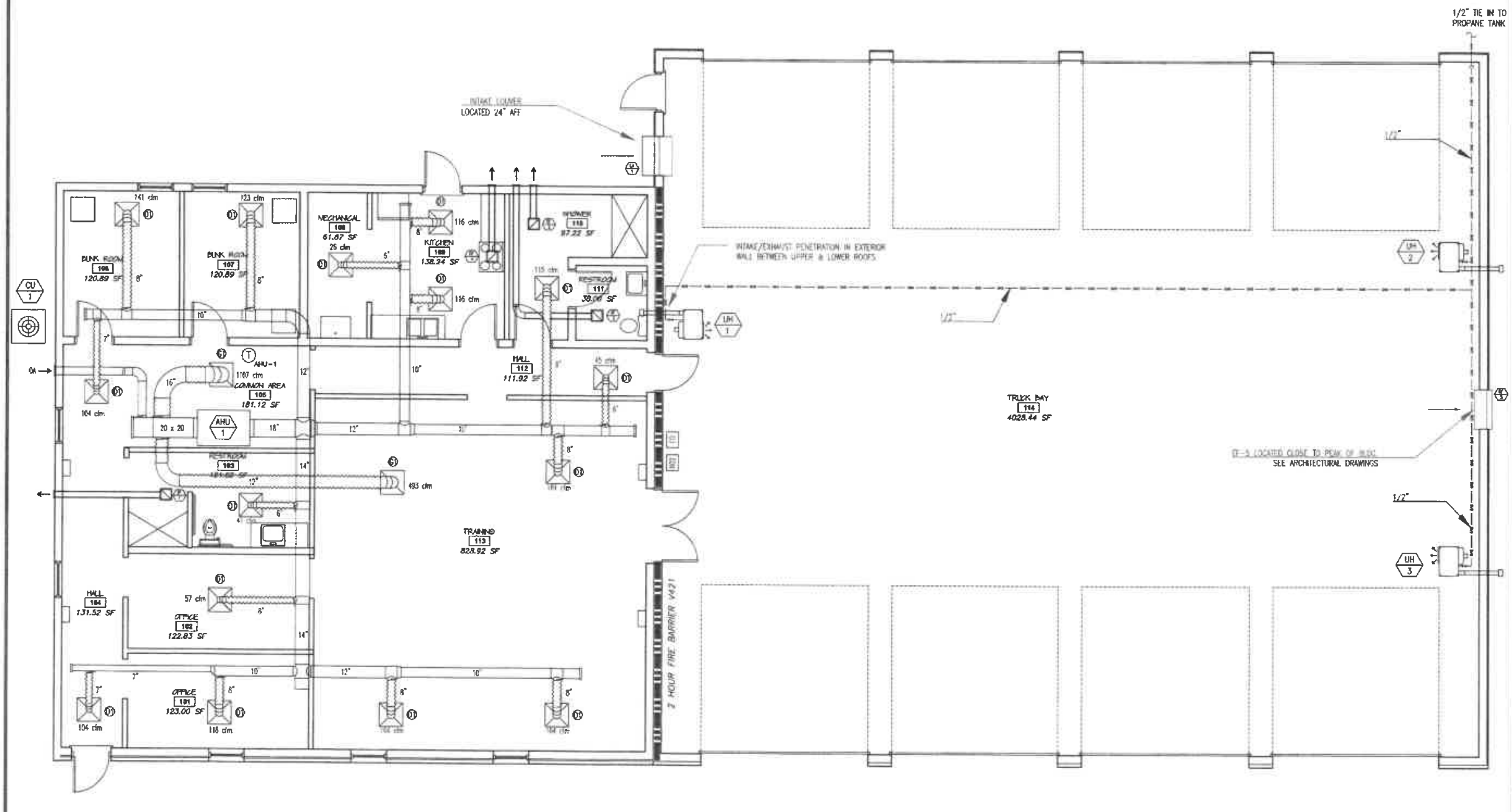

HVAC PLAN

¼" = 1 FOOT

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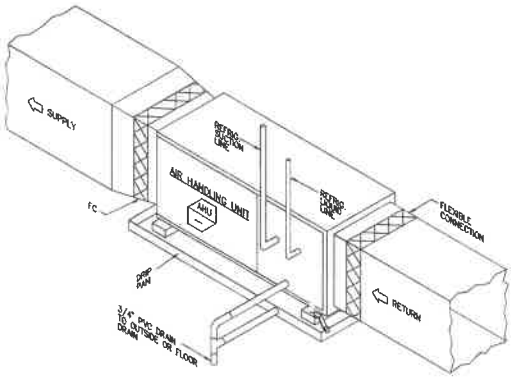
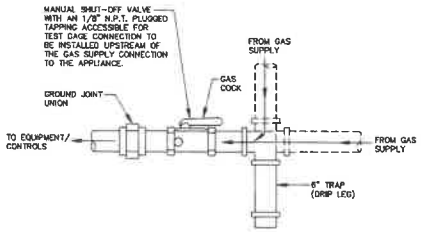
HVAC PLAN
MERRY HILL - MIDWAY VFD
109 NC 45
WINDSOR, NORTH CAROLINA

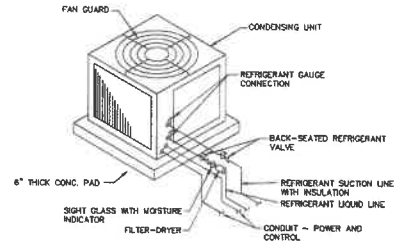
Revisions/Issue	Date
Drawn	DPA
Project No.	TBD
Date	6/11/23
Plot Scale	SEE PLAN
Sheet 2 of 3	M1.02



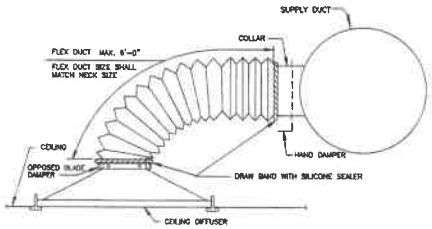
HORIZONTAL AIR HANDLING UNIT
N.T.S.



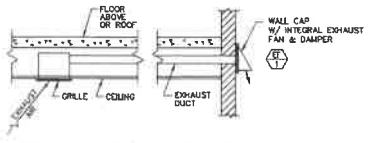
GAS CONNECTION TO EQUIPMENT DETAIL
NOT TO SCALE



AIR-COOLED CONDENSING UNIT DETAIL (TYPICAL)
N.T.S.



TYPICAL DIFFUSER CONNECTION
(SIDE OF DUCT CONNECTION)
NOT TO SCALE



BATHROOM EXHAUST FAN DETAIL
- SIDEWALL DISCHARGE
N.T.S.

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HVAC DETAILS
MERRY HILL - MIDWAY VFD
109 NC 45
WINDSOR, NORTH CAROLINA

Revisions/Issue	Date

Drawn DFA
Project TDC
Date 6/11/21
Plot Scale NTS
M1.03
Sheet 3 of 3

LIGHT FIXTURE SCHEDULE										
MARK	DESCRIPTION	LOUVER/LENS	LAMPS TYPE	LAMPS CCT	VOLTAGE	INPUT WATTAGE	MOUNTING	REMARKS	MFG	MODEL
A	6"RECESSED	-	LED	3000K	120	12	RECESSED	2	LITHONIA	6JBEMW LED 30K 90CRI MG
B	24" VANITY	ACRYLIC	LED	3000K	120	18	SURFACE	2	LITHONIA	FMVCCLS 24IN MVOLT 30K 90CRI
C	2X2 LAY-IN	-	LED	3500K	120	27	LAY-IN	2	LITHONIA	STAKS 2X2 ALO3 SWW7
D	LOW BAY	ACRYLIC	LED	3500K	120	74	SUSPENDED	2	LITHONIA	LFIT L46 10000LM SEF MVOLT EZ1 35K 80CRI
E	WALLPACK	-	LED	4000K	120	32	SURFACE	2	LITHONIA	TWR2 LED P2 40K MVOLT DDBXD
EE	EXTERIOR DUAL LED EMERGENCY LIGHT	POLYCARBONATE	LED	N/A	120	5	SURFACE	1,2	CELP	XEW-LED-BH-4CEN
EXM	LED EXIT/EMERGENCY COMBO	ACRYLIC	LED	N/A	120	2	SURFACE	1,2	CELP	XC-LED-2-R-W-SD
EM	DUAL HEAD EMERGENCY FIXTURE	ACRYLIC	LED	N/A	120	2	SURFACE	1,2	LITHONIA	ELM6L-SDRT

1. FIXTURE SHALL HAVE BATTERY BACKUP FOR 90 MINUTE ILLUMINATION.
2. OR EQUAL BY COOPER, HOBERM, OR CURRENT BY GE LIGHTING OR HUBBLE LIGHTING.

LIGHTING SENSOR CONTROL LEGEND

MARK	DESCRIPTION	MODEL NUMBER
$P	PICO SWITCH	PJ2-2B-GBH-L01(CW-1-WH
RF	0A RELAY MODULE	RMJS-8T-DV-B
OS	WIRELESS CEILING MOUNT	LRF2-OCR2B-P-WH

GENERAL LIGHTING SENSOR NOTES:

1. ALL SWITCHES AND SENSORS TO BE WHITE.
2. EC TO ORDER ALL WALL PLATES AND ACCESSORIES FOR COMPLETE INSTALLATION.
3. EC TO INCLUDE PRE-INSTALLATION MEETING IN BID.

OCCUPANCY SENSORS SEQUENCE OF OPERATIONS WITH LINE-VOLTAGE SWITCH

1. LINE VOLTAGE SWITCH MUST BE TURNED ON OR IN ON POSITION.
2. OCCUPANCY SENSOR DETECTS MOTION AND TURNS THE LIGHTS ON. SENSOR HOLDS LIGHTS ON AS LONG AS MOTION IS DETECTED. IF AFTER THE SET TIME DELAY, NO MOTION IS DETECTED, LIGHTS TURN OFF. CONSULT OWNER FOR DESIRED TIME DELAY SETTING.
3. THE LOAD CAN BE TURNED OFF USING THE MANUAL LINE VOLTAGE SWITCH AND IT STAYS OFF UNTIL THE SWITCH IS TURNED TO ON POSITION AND THE OCCUPANCY SENSOR DETECTS OCCUPANCY.

NOTES FOR EMERGENCY FIXTURES

1. FOR INTERIOR FIXTURES WITH EMERGENCY BATTERIES, WIRE THE BATTERY CHARGER ON THE SAME CIRCUIT AS THE FIXTURE BALLAST AHEAD OF ALL SWITCHES, SENSORS, ETC.
2. FOR EXTERIOR FIXTURES WITH EMERGENCY BATTERIES, WIRE THE BATTERY CHARGER ON THE SAME CIRCUIT AS THE NORMAL EXTERIOR LIGHTS OR AS SHOWN ON PLANS AHEAD OF ALL CONTACTORS, PHOTOCELLS, ETC.
3. IN BOTH CASES, EMERGENCY POWER SHOULD BRIDGE ONLY IN THE EVENT OF THE LOSS OF NORMAL POWER. ALL BATTERIES SHALL BE SIZED TO POWER EMERGENCY ILLUMINATION FOR 90 MINUTES MINIMUM.

LIGHTING DEVICE LEGEND		
SYMBOL	DESCRIPTION	REMARKS
$	SINGLE POLE WALL SWITCH	HEAVY DUTY, AC ONLY, COMMERCIAL GRADE GENERAL USE SNAP SWITCH COMPLYING WITH NEMA WD 6 AND WD 1. IVORY PLASTIC BODY WITH TOGGLE HANDLE. 120-277V, 20A. MEET FEDERAL SPECIFICATION W-S-896.
$OS	WALL MOUNTED OCCUPANCY SENSOR	WATTSTOPPER DW-100 LINE VOLTAGE OCCUPANCY SENSOR. ULTRA SONIC AND INFRARED.
$3	3 WAY SWITCH	3-WAY TYPE SWITCH WITH SAME CHARACTERISTICS AS SINGLE POLE SWITCH ABOVE.
⊠	EXHAUST FAN	VENT FAN. 10W, CFM AS NOTED MC TO PROVIDE AND VENT, EC TO WIRE.

POWER DEVICE LEGEND		
SYMBOL	DESCRIPTION	REMARKS
▷	DATA AND TELEPHONE JACK	PHONE/DATA OUTLET. EC TO INSTALL 3/4"C WITH PULL-STRING FROM OUTLET BOX TO ABOVE CEILING FOR FUTURE USE. JACKS AND COMMUNICATION CABLING BY OTHERS.
⊖	DUPLEX RECEPTACLE	NEMA 5-20R, HEAVY DUTY, COMMERCIAL GRADE, 125V, 20A COMPLYING WITH NEMA WD 1 AND WD 1. GFCI OR AFCI IF NOTED. 'WP' DENOTES WEATHERPROOF COVER. 'CW' DENOTES COUNTER HEIGHT. LISTED TAMPERPROOF IF NOTED. MEET FEDERAL SPECIFICATION W-C-596.
⊘	FUSIBLE DISCONNECT SWITCH	HEAVY DUTY TYPE, TYPE 1 ENCLOSURE IN INTERIOR APPLICATIONS, TYPE 3R ENCLOSURE IN EXTERIOR APPLICATIONS, FUSE ACCORDING TO NAMEPLATE DATA.
☐	DISCONNECT SWITCH	HEAVY DUTY TYPE, TYPE 1 ENCLOSURE IN INTERIOR APPLICATIONS, TYPE 3R ENCLOSURE IN EXTERIOR APPLICATIONS.
Ⓙ	JUNCTION BOX	GALVANIZED METAL BOX CONSTRUCTED IN ACCORDANCE WITH 314.40 OF THE NEC.

ELECTRICAL DESIGNER'S STATEMENT		
ELECTRICAL SYSTEM AND EQUIPMENT METHOD OF COMPLIANCE PRESCRIPTIVE _X_ PERFORMANCE ___ ENERGY COST BUDGET ___		
LIGHTING SCHEDULE:		
LAMP TYPE REQUIRED IN FIXTURE:		SEE LIGHTING LEGEND
NUMBER OF LAMPS PER FIXTURE:		SEE LIGHTING LEGEND
BALLAST TYPE USED IN FIXTURE:		SEE LIGHTING LEGEND
NUMBER OF BALLASTS IN FIXTURE:		SEE LIGHTING LEGEND
TOTAL WATTAGE PER FIXTURE:		SEE LIGHTING LEGEND
TOTAL INTERIOR WATTAGE SPECIFIED VS ALLOWED	WATTS SPECIFIED	WATTS ALLOWED
	2167.0	4454.16

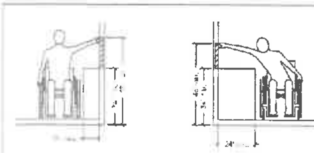
OCCUPANCY	AREA (sf)	ALLOWANCE (W/sf)	WATTAGE ALLOWED
FIRE STATION	6648	0.67	4454.16
TOTAL	6648		4454.16

EQUIPMENT SCHEDULES WITH MOTORS (NOT USED FOR MECHANICAL SYSTEMS)
MOTOR HORSEPOWER: N/A
NUMBER OF PHASES: N/A
MINIMUM EFFICIENCY: N/A
MOTOR TYPE: N/A
NUMBER OF POLES: N/A

DESIGNER STATEMENT: TO THE BEST OF MY KNOWLEDGE AND BELIEF, THE DESIGN OF THIS BUILDING COMPLIES WITH THE 2018 NORTH CAROLINA ENERGY CONSERVATION CODE.

FOR THE ADDITIONAL PRESCRIPTIVE REQUIREMENT REQUIRED BY C406 OF 2018 NORTH CAROLINA ENERGY CONSERVATION CODE, WE ARE CHOOSING C406.3 - REDUCED LIGHTING POWER DENSITY.

2167 W SPECIFIED <= 4008 W (4454 W ALLOWED X 90%)



ANSI A117.1 FIG. 308.3.2, OBSTRUCTED HIGH REACH SIDE.
ALL SWITCHES AND CONTROLS MUST COMPLY FOR ALL COUNTERTOPS

ELECTRICAL SCHEDULES 1

GENERAL ELECTRICAL NOTES:

ABBREVIATIONS:

1. THE FOLLOWING ABBREVIATIONS SHALL APPLY TO NOTES AND PLANS: PC – PLUMBING CONTRACTOR, EC – ELECTRICAL CONTRACTOR, MC – MECHANICAL CONTRACTOR, GC – GENERAL CONTRACTOR, FASC – FIRE ALARM SYSTEM CONTRACTOR, AHJ – AUTHORITY HAVING JURISDICTION.
2. "PROVIDE" MEANS TO FURNISH AND INSTALL. THE ELECTRICAL CONTRACTOR SHALL ALSO INSTALL MATERIALS AND EQUIPMENT FURNISHED BY OTHERS AND THE GENERAL CONTRACTOR AS REQUIRED.
3. EC SHALL PROVIDE LABOR, MATERIALS, EQUIPMENT, AND SERVICES NECESSARY AND REASONABLY INCIDENTAL TO INSURE A COMPLETE AND OPERATIONAL ELECTRICAL SYSTEM IN ACCORDANCE WITH THESE PLANS AND SPECIFICATIONS. MINOR ITEMS, ACCESSORIES, AND DEVICES REASONABLY INFERABLE AS NECESSARY FOR THE COMPLETION AND PROPER OPERATION OF ANY ELECTRICAL SYSTEM SHALL BE PROVIDED BY THE ELECTRICAL CONTRACTOR.
4. WORKMANSHIP SHALL BE IN ACCORDANCE WITH NECA 1 "STANDARD PRACTICE FOR GOOD WORKMANSHIP IN ELECTRICAL CONTRACTING."
5. ALL MATERIALS AND EQUIPMENT SHALL BE DELIVERED TO THE SITE AND UNLOADED BY THE ELECTRICAL CONTRACTOR AT AN APPROVED LOCATION. THE ELECTRICAL CONTRACTOR SHALL PROTECT ALL MATERIALS AND EQUIPMENT FROM BREAKAGE, THEFT, AND THE ELEMENTS. ALL MATERIALS AND EQUIPMENT SHALL REMAIN THE PROPERTY OF THE ELECTRICAL CONTRACTOR UNTIL THE PROJECT HAS BEEN COMPLETED AND TURNED OVER TO THE OWNER.
6. THE ELECTRICAL CONTRACTOR SHALL OBTAIN AND PAY FOR ALL PERMITS, FEES, AND INSPECTIONS NECESSARY FOR THE COMPLETION OF THE WORK UNDER THIS CONTRACT.
7. DO NOT SCALE THESE DRAWINGS–REFER TO ARCHITECTURAL SHEETS FOR DIMENSIONS.
8. TRADE NAMES AND MANUFACTURERS ARE SPECIFIED TO ESTABLISH A QUALITY STANDARD. SUBSTITUTIONS SHALL BE PERMITTED IF APPROVED BY THE ENGINEER PRIOR TO INSTALLATION. ALL LISTED MODEL NUMBERS SHALL BE VERIFIED WITH THE MANUFACTURER FOR PROPER APPLICATION OF EQUIPMENT.
9. THE ELECTRICAL CONTRACTOR SHALL VISIT THE SITE PRIOR TO BIDDING TO BECOME FAMILIAR WITH EXISTING CONDITIONS. THE ELECTRICAL CONTRACTOR SHALL CONTACT THE ENGINEER TO RESOLVE ANY DISCREPANCIES BETWEEN EXISTING CONDITIONS AND THESE PLANS. THE ELECTRICAL CONTRACTOR SHALL COORDINATE WITH OTHER TRADES PRIOR TO THE START OF CONSTRUCTION.
10. GROUNDING AND BONDING SHALL BE PER NEC ARTICLE 250. THE RACEWAY SYSTEM SHALL NOT BE RELIED UPON FOR GROUNDING CONTINUITY. A GREEN EQUIPMENT GROUNDING CONDUCTOR, SIZED PER NEC TABLE 250-122, SHALL BE RUN IN ALL POWER RACEWAYS. FOR NON-ISOLATED GROUND CIRCUITS PROVIDE ONE EQUIPMENT GROUNDING CONDUCTOR PER CONDUIT RUN. FOR ISOLATED GROUND CIRCUITS, PROVIDE ONE NEUTRAL AND ONE ISOLATED GROUND WIRE FOR EACH CIRCUIT; IN ADDITION, PROVIDE ONE EQUIPMENT GROUNDING CONDUCTOR PER CONDUIT RUN. MAIN BONDING JUMPERS AND SYSTEM BONDING JUMPERS SHALL BE INSTALLED IN ACCORDANCE WITH 250.28 OF THE NEC. FOR BUILDINGS OR STRUCTURES SUPPLIED BY FEEDERS OR BRANCH CIRCUITS, GROUNDING AND BONDING SHALL BE IN ACCORDANCE WITH 250.32. SEPARATELY DERIVED AC SYSTEMS SHALL BE GROUNDED IN ACCORDANCE WITH 250.30. RESISTANCE TO GROUND SHALL NOT EXCEED 25 OHMS; ADDITIONAL GROUNDING ELECTRODES SHALL BE INSTALLED PER 250.56 AS NECESSARY.
11. THE ELECTRICAL CONTRACTOR SHALL ALSO COORDINATE WITH THE GENERAL CONTRACTOR REGARDING THE BONDING OF THE FOOTING REBAR, SO THAT IT WILL BE IN PLACE AND READY AT TIME OF FOOTING INSPECTION.
12. ALL MATERIALS AND EQUIPMENT SHALL COMPLY WITH THE UNDERWRITERS' LABORATORIES, INC. STANDARDS OR HAVE UL APPROVAL, OR BEAR UL RE-EXAMINATION LISTING WHERE SUCH APPROVAL HAS BEEN ESTABLISHED FOR THE TYPE OF DEVICE IN QUESTION.
13. CONDUCTORS, FUSES, CIRCUIT BREAKERS, AND DISCONNECT SWITCHES SHOWN ON THESE PLANS HAVE BEEN SIZED FOR THE SPECIFIED EQUIPMENT. BEFORE ORDERING ELECTRICAL EQUIPMENT, THE ELECTRICAL CONTRACTOR SHALL COORDINATE WITH OTHER CONTRACTORS ON THE SITE AND NOTIFY THE ENGINEER OF ANY DISCREPANCIES SHOULD CONDUCTOR, CIRCUIT BREAKER, OR FUSE SIZES REQUIRE CHANGE.
14. THE ELECTRICAL CONTRACTOR SHALL COORDINATE WITH THE GENERAL CONTRACTOR TO ENSURE THE FOLLOWING MATERIALS ARE RECYCLED DURING THE CONSTRUCTION PHASE OF THE PROJECT: LIGHT FIXTURES, INCLUDING PROPER DISPOSAL OF BALLASTS, FLUORESCENT LIGHT BULBS, AND TRANSFORMERS, WIRING AND ELECTRICAL EQUIPMENT, AND INSULATION. THESE MATERIALS CONTAINING LEAD, ASBESTOS, PCBs (FLUORESCENT LAMP BALLASTS), OR OTHER HARMFUL SUBSTANCES SHALL BE HANDLED AND DISPOSED OF IN ACCORDANCE WITH FEDERAL AND STATE LAWS AND REQUIREMENTS CONCERNING HAZARDOUS WASTE.
15. ALL WORK SHALL CONFORM TO 2020 NATIONAL ELECTRIC CODE, 2018 STATE BUILDING CODE, AND ALL APPLICABLE LOCAL CODES.

MATERIALS:

1. THE ELECTRICAL CONTRACTOR SHALL PROVIDE ALL NECESSARY DISCONNECTS, SWITCHES, RECEPTACLES, TERMINALS, ETC. UNDER THE ELECTRICAL BID AND SHALL INCLUDE ALL NECESSARY CIRCUITS AND CONNECTIONS TO THE EQUIPMENT PROVIDED BY ALL SUPPLIERS, UNLESS NOTED OTHERWISE BY OTHER DISCIPLINES.
2. ELECTRICAL CONTRACTOR SHALL PROVIDE ALL SERVICE ENTRANCE EQUIPMENT, SUB PANELS, AND OTHER ELECTRICAL DISTRIBUTION EQUIPMENT AS NECESSARY FOR A COMPLETE INSTALLATION. ELECTRICAL CONTRACTOR SHALL COORDINATE WITH UTILITY REGARDING SERVICE AND METERING DETAILS. PRIOR TO ORDERING EQUIPMENT, THE ELECTRICAL CONTRACTOR SHALL OBTAIN THE AVAILABLE FAULT CURRENT OR TRANSFORMER SIZE AND IMPEDANCE FROM THE UTILITY AND CONTACT THE ENGINEER IF THE VALUE EXCEEDS THE EQUIPMENT SPECIFIED. PANEL BOARDS AND SWITCH BOARDS SHALL BE SQUARE D, CUTLER-HAMMER, SIEMENS, OR GE. BUSES SHALL BE COPPER UNLESS OTHERWISE APPROVED BY THE ENGINEER. RECESSED PANEL BOARDS SHALL BE INSTALLED FLUSH WITH THE WALL FINISH. METER BASES SHALL COMPLY WITH THE UTILITY'S SPECIFICATIONS AND SHALL BE MOUNTED AT A HEIGHT APPROVED BY THE UTILITY. ALL EQUIPMENT IDENTIFIED FOR SERVICE ENTRANCE USE SHALL BE SO LABELED AND UL LISTED FOR SUCH USE. ELECTRICAL CONTRACTOR SHALL INSTALL ALL ELECTRICAL EQUIPMENT WITH CLEARANCES PER NEC 110.26. ELECTRICIAN SHALL PERMANENTLY LABEL EQUIPMENT PER NEC 110.24.
3. ENCLOSED SAFETY SWITCHES SHALL BE HEAVY DUTY TYPE BY SQUARE D, EATON, OR GE. ENCLOSED SWITCHES SHALL HAVE A HANDLE LOCKABLE IN THE OFF POSITION AND SHALL HAVE A HANDLE INTERLOCKED TO PREVENT OPENING THE FRONT COVER WHILE IN THE ON POSITION. ENCLOSED SWITCHES OF THE FUSIBLE TYPE SHALL BE FUSED IN ACCORDANCE WITH NAMEPLATE DATA WITH DUAL ELEMENT TYPE FUSES BY BUSSMAN, LITTELFUSE, OR MERSEN.
4. OCCUPANCY SENSORS SHALL BE BY WATTSTOPPER, LUTRON, LEVITON, SENSOR SWITCH, HUBBELL, OR APPROVED EQUAL.
5. CIRCUIT BREAKERS SHALL BE MOLDED-CASE, THERMAL MAGNETIC TYPE WITH QUICK-MAKE, QUICK-BREAK MECHANISM, COMMON TRIP ON MULTI-POLE BREAKERS, AND UL LISTED FOR BOTH COPPER AND ALUMINUM CONDUCTORS. CIRCUIT BREAKERS IN PANELS SHALL BE SERIES RATED WITH THE MAIN BREAKER, FULLY RATED FOR THE SYSTEM, OR SERIES RATED WITH THE BREAKER FEEDING THE PANEL FROM THE FACTORY.
6. ALL WIRE, CONNECTORS, TERMINALS, AND LUGS SHALL BE PROVIDED BY THE ELECTRICAL CONTRACTOR. WHERE CONDUCTORS ARE RUN IN PARALLEL, LUGS SHALL BE LISTED FOR PARALLEL CONDUCTORS. PUSH WIRE CONNECTORS ARE NOT ALLOWED FOR BUILDING WIRE. PUSH CONNECTORS ARE ONLY ALLOWED, WHEN APPROVED, AS PART OF MANUFACTURED LISTED PRODUCTS. ALL WIRE SHALL BE INSTALLED IN CONDUIT UNLESS SPECIFICALLY NOTED OTHERWISE.
7. THE INSULATION TYPE FOR INTERIOR WIRING SHALL BE DUAL RATED THHN/THWN OR XHHW. ALL WIRING INSTALLED BELOW GRADE OR IN MOIST OR WET LOCATIONS SHALL HAVE TYPE THWN OR XHHW INSULATION. INSULATION VOLTAGE RATING SHALL BE 600 VOLTS AND A MINIMUM TEMPERATURE RATING OF 75°C. CONDUCTORS SHALL BE SOLID OR STRANDED COPPER FOR #10 AWG AND #12 AWG, AND STRANDED COPPER FOR #8 AWG AND LARGER SIZES. ALL WIRING AND CABLE SHALL BE UL LISTED. ALL TERMINATIONS AND DEVICES SHALL BE RATED FOR USE WITH 75°C CONDUCTORS. FINAL CONNECTIONS TO ALL MOTORS AND EQUIPMENT SUBJECT TO VIBRATION OR MOVEMENT SHALL BE MADE WITH STRANDED COPPER CONDUCTORS. CONDUCTORS SHALL BE BY CERRO WIRE, INC, INDUSTRIAL WIRE & CABLE, INC, ENCORE WIRE CORPORATION, OR SOUTHWIRE COMPANY.
8. JOINTS IN SOLID CONDUCTORS SHALL BE SPLICED USING IDEAL "WIRE NUTS", 3M "SCOTCH LOCK", OR T&B "PIGGY" CONNECTORS IN JUNCTION BOXES, OUTLET BOXES, AND LIGHTING FIXTURES. JOINTS IN STRANDED CONDUCTORS SHALL BE SPLICED BY APPROVED MECHANICAL CONNECTORS AND GUM RUBBER TAPE OR FRICTION TAPE. SOLDERLESS MECHANICAL CONNECTORS FOR SPLICES AND TAPS, PROVIDED WITH UL APPROVED INSULATING COVERS, MAY BE USED INSTEAD OF MECHANICAL CONNECTORS PLUS TAPE. IN ALL CASES, CONDUCTORS SHALL BE CONTINUOUS FROM OUTLET TO OUTLET AND NO SPLICING SHALL BE MADE EXCEPT WITHIN OUTLET OR JUNCTION BOXES, TROUGHS, OR GUTTERS. WHERE CONCENTRIC, ECCENTRIC, OR OVERSIZED KNOCKOUTS ARE ENCOUNTERED, A GROUNDING TYPE INSULATED BUSHING SHALL BE PROVIDED.
9. ALL LUMINAIRES SHALL BE LISTED. LUMINAIRES IN WET OR DAMP LOCATIONS SHALL BE MARKED AS SUITABLE FOR THE RESPECTIVE USE. EMERGENCY LIGHTING SHALL BE INSTALLED AS SHOWN. FINAL LOCATIONS OF ALL EXIT AND EMERGENCY LIGHTS SHALL BE VERIFIED WITH THE BUILDING INSPECTOR PRIOR TO INSTALLATION. ALL FLUORESCENT FIXTURES SHALL HAVE ELECTRONIC BALLASTS MEETING ANSI C82.11 FOR ELECTRONIC BALLAST PERFORMANCE. ALL BALLASTS SHALL BE UL LISTED AND MEET FEDERAL AND STATE EFFICIENCY REQUIREMENTS.
10. ALL CONDUIT, FITTINGS, COUPLINGS, AND SUPPORTS SHALL BE PROVIDED BY THE ELECTRICAL CONTRACTOR. CONDUIT FITTINGS AND COUPLINGS SHALL BE BY APPLETON, RACO, OR O-Z/GEDNEY. COUPLINGS SHALL BE THREADED, SET-SCREW, OR COMPRESSION TYPE. INDENTER OR CRIMP TYPE ARE NOT PERMITTED. CONDUIT FITTINGS AT ALL ELECTRICAL BOXES INCLUDING PULL, JUNCTION, AND OUTLET BOXES, SHALL HAVE INSULATED THROATS TO PREVENT INSULATION SCORING. DIE CAST FITTINGS ARE NOT PERMITTED.
11. EMT SHALL BE MANUFACTURED IN ACCORDANCE WITH AMERICAN NATIONAL STANDARDS INSTITUTE-AMERICAN NATIONAL STANDARD FOR STEEL ELECTRICAL METALLIC TUBING (EMT), ANSI C80.3 AND UL 797. RIGID METAL CONDUIT SHALL BE MANUFACTURED IN ACCORDANCE WITH ANSI-AMERICAN NATIONAL STANDARD FOR ELECTRICAL RIGID STEEL CONDUIT (ERSC), ANSI C80.1 AND UL 6. INTERMEDIATE METAL CONDUIT SHALL BE MANUFACTURED IN ACCORDANCE WITH ANSI-AMERICAN NATIONAL STANDARD FOR INTERMEDIATE METAL CONDUIT ANSI C80.6 AND UL 1242.
12. METAL CONDUIT SHALL BE BY ALLIED TUBING & CONDUIT, BECK MANUFACTURING, INC, OR WHEATLAND TUBE COMPANY. FLEXIBLE METAL CONDUIT, LIQUID-TIGHT FLEXIBLE METAL CONDUIT, AND NONMETALLIC CONDUIT SHALL BE BY AFC CABLE SYSTEMS, INC, ELECTRI-FLEX COMPANY, OR INTERNATIONAL METAL HOSE.

METHODS:

1. EC SHALL REVIEW THE MECHANICAL PLANS TO ESTABLISH POINTS OF CONNECTION AND THE EXTENT OF THE ELECTRICAL WORK TO BE PROVIDED IN THE CONTRACT.
2. ALL CIRCUIT BREAKERS FEEDING HVAC EQUIPMENT SHALL BE HACR BREAKERS. ALL BRANCH CIRCUIT CONDUCTORS SHALL BE MINIMUM #12 AWG IN 3/4 in CONDUIT. EACH MULTI-WIRE BRANCH CIRCUIT SHALL BE PROVIDED WITH A MEANS TO SIMULTANEOUSLY DISCONNECT ALL UNGROUNDED CONDUCTORS AT THE SOURCE PER NEC 210.4(B). GROUP ALL CONDUCTORS OF EACH MULTI-WIRE BRANCH CIRCUIT PER 210.4(D) WITH WIRE TIES OR SIMILAR MEANS. DO NOT EXCEED THREE HOMERUNS PER CONDUIT. DO NOT INSTALL ISOLATED GROUND AND NON-ISOLATED GROUND CIRCUITS IN THE SAME CONDUIT. INSTALL CONDUCTORS OF DIFFERENT VOLTAGES IN SEPARATE CONDUITS.
3. COLOR CODE CONDUCTORS PER NEC. FEEDERS SHALL BE IDENTIFIED IN ACCORDANCE WITH NEC 215.12. USE BLACK AND RED FOR PHASES A AND B RESPECTIVELY ON 120/240 VOLT SINGLE-PHASE SYSTEMS AND WHITE FOR THE NEUTRAL. THIS IDENTIFICATION SHALL BE MADE AT EACH POINT WHERE A CONNECTION IS MADE. COLORS SHALL BE FACTORY APPLIED FOR CONDUCTORS #8 AWG AND SMALLER. ALL EQUIPMENT GROUNDING CONDUCTORS SHALL BE GREEN IN COLOR AND MINIMUM #12 AWG. THE EC SHALL PROVIDE PLENUM RATED CABLE FOR ANY ELECTRICAL, TELEPHONE, COMMUNICATION, OR OTHER CABLE THAT ENTERS CEILING RETURN PLENUMS.
4. ALL LIGHT FIXTURES SHALL BE SUPPORTED INDEPENDENTLY OF THE SUSPENDED CEILING. COORDINATE LIGHTING LAYOUT WITH CEILING GRID, MECHANICAL EQUIPMENT, DUCTWORK AND SPRINKLER HEADS AS NECESSARY. SEE REFLECTED CEILING PLAN FOR DETAILS. FLUORESCENT FIXTURES UTILIZING DOUBLE-ENDED LAMPS MUST HAVE A DISCONNECTING MEANS COMPLYING WITH NEC 410.130(G).
5. MOUNT LIGHT SWITCHES AT 48 in AFF. MULTIPLE SWITCHES AT SAME LOCATION SHALL BE UNDER ONE WALL PLATE. VERIFY WALL PLATE COLOR AND MATERIAL WITH THE ARCHITECT/OWNER. INSTALL SWITCHES WITH off POSITION DOWN. ALL SWITCHES SHALL BE HEAVY DUTY, IVORY PLASTIC WITH TOGGLE HANDLE, RATED 120-277V AC, AND COMPLYING WITH NEMA WD 6 AND WD 1. SWITCHES SHALL BE BY COOPER WIRING DEVICES, LEVITON MANUFACTURING, PASS & SEYMOUR, OR HUBBELL. PROVIDE BOX DEVICE PARTITION/DIVIDERS FOR MULTI-GANG BOXES FOR COMPLIANCE WITH NEC 404.8(B).
6. ELECTRICAL CONTRACTOR SHALL PROVIDE FIRE-STOPPING AT ALL ELECTRICAL PENETRATIONS OF RATED FLOORS AND WALLS TO PRESERVE OR RESTORE THE FIRE-RESISTANCE RATINGS. SEAL PENETRATIONS USING A UL LISTED SYSTEM FOUND IN THE UL DIRECTORY SPECIFIC TO THE UL LISTING OF THE ASSEMBLY BEING PENETRATED. SEE ARCHITECTURAL PLANS FOR UL RATED ASSEMBLIES SPECIFIC TO THIS PROJECT.
7. ELECTRICAL CONTRACTOR SHALL PROVIDE GFCI RECEPTACLES IN KITCHENS, RESTROOMS, GARAGES, AND IN SHOP AREAS AS REQUIRED BY NEC. REFRIGERATORS AND WATER COOLERS MUST HAVE A DEDICATED GFCI BREAKER. EACH OUTDOOR HVAC UNIT MUST HAVE A GFCI RECEPTACLE WITHIN 25 FEET FOR SERVICING. GFCI RECEPTACLES SHALL CONFORM TO UL 943 CLASS A AND UL 498 STANDARDS. RECEPTACLES SHALL BE BY COOPER WIRING DEVICES, LEVITON MANUFACTURING, PASS & SEYMOUR, OR HUBBELL. ALL RECEPTACLES SHALL BE 125V RATED, HEAVY DUTY, AND COMPLY WITH NEMA WD 6 AND WD 1.
8. LOCATIONS AND HEIGHTS OF ALL WALL-MOUNTED DEVICES SHALL BE COORDINATED WITH THE ARCHITECT PRIOR TO INSTALLATION.
9. CONCEAL ALL CONDUIT EXCEPT IN MECHANICAL ROOMS OR UNFINISHED AREAS AS NOTED. USE EMT CONDUIT FOR ALL BRANCH CIRCUITS AND FEEDERS INSIDE THE BUILDING. TYPE MC CABLE AND TYPE AC CABLE MAY BE INSTALLED WITHIN WALLS IF ALL NEUTRAL WIRES, ISOLATED GROUND WIRES, AND EQUIPMENT GROUND WIRES AS LISTED ABOVE ARE CONTAINED IN THE CABLE. ** TYPE MC CABLE MAY BE USED FOR INTERIOR BRANCH CIRCUITS IN NORMALLY DRY LOCATIONS SUBJECT TO THE RESTRICTIONS OF NEC 334.10 AND 334.12. TYPE NM CABLE CONDUCTORS SHALL BE DERATED PER NEC 334.80. ** FLEXIBLE CONNECTIONS TO MOTORS AND OTHER EQUIPMENT SHALL BE MADE USING WEATHERPROOF FLEXIBLE CONDUIT. FOR LAY-IN LIGHT FIXTURES, USE MAXIMUM OF SIX (6) FEET OF FLEXIBLE MC CABLE (OR THE FLEXIBLE CONDUIT PROVIDED BY THE FIXTURE MANUFACTURER). SCHEDULE 40 PVC CONDUIT MAY BE USED FOR THE SECONDARY UNDERGROUND SERVICE, UNDERGROUND TELEPHONE SERVICE, AND BRANCH AND FEEDER CIRCUITS UNDER SLAB OR EXTERIOR TO THE BUILDING. EXPOSED EXTERIOR CONDUIT SHALL BE SCHEDULE 80 PVC. ALL UNDERGROUND RACEWAYS SHALL BE IDENTIFIED WITH UNDERGROUND LINE MARKING TAPE 6-8 in BELOW GRADE DIRECTLY ABOVE THE RACEWAY. PROVIDE PULL WIRE IN EMPTY CONDUITS. UPSIZE CONDUIT FROM MINIMUM SIZE AS NECESSARY FOR LONGER PULLS. UNDERGROUND RACEWAYS THAT STUB INTO THE BOTTOM OF SWITCHBOARDS, COMMON TRANSFORMERS, GENERATORS, ETC., SHALL RISE AT LEAST 2 in ABOVE THE FINISHED SLAB TO PREVENT WATER FROM RUNNING INTO THE RACEWAYS. RACEWAYS THAT PENETRATE EXTERIOR WALLS OR INTERIOR PARTITIONS SEPARATING SPACES THAT WILL BE AT SIGNIFICANTLY DIFFERENT TEMPERATURES SHALL BE SEALED IN ACCORDANCE WITH 300.5(G), 300.7(A), AND 300.50(E) OF THE NEC. ROUTE CONDUIT IN AND UNDER SLAB FROM POINT-TO-POINT. ROUTE EXPOSED CONDUIT AND CONDUIT INSTALLED ABOVE ACCESSIBLE CEILINGS PARALLEL AND PERPENDICULAR TO WALLS. COMPLETELY AND THOROUGHLY SWAB ALL RACEWAYS BEFORE INSTALLING WIRE. PULL ALL CONDUCTORS INTO EACH RACEWAY AT ONE TIME. USE A SUITABLE WIRE PULLING LUBRICANT FOR BUILDING WIRE #4 AWG AND LARGER.
10. CABLES, RACEWAYS, OR BOXES, INSTALLED IN EXPOSED OR CONCEALED LOCATIONS UNDER METAL-CORRUGATED SHEET ROOF DECKING, SHALL BE INSTALLED AND SUPPORTED SO THERE IS NOT LESS THAN 1-1/2 in MEASURED FROM THE LOWEST SURFACE OF THE ROOF DECKING TO THE TOP OF THE CABLE, RACEWAY, OR BOX. A CABLE, RACEWAY, OR BOX SHALL NOT BE INSTALLED IN CONCEALED LOCATIONS IN METAL-CORRUGATED, SHEET DECKING-TYPE ROOF. SEE NEC 300.4(E).
11. THE ELECTRICAL CONTRACTOR SHALL PROVIDE ALL OUTLET, JUNCTION, PULL BOXES, FITTINGS, AND SUPPORTS. ALL OUTLET AND JUNCTION BOXES SHALL BE GALVANIZED STEEL TYPE BY APPLETON, STEEL CITY, OR RACO. EXTERIOR BOXES SHALL BE TYPE FS. WIREWAY BOXES SHALL BE TYPE 4X. WHERE SURFACE MOUNTED BOXES ARE USED, THOSE BOXES AND THEIR FACEPLATES SHALL HAVE ROUNDED CORNERS. BOXES INSTALLED IN FLOORS SHALL BE RATED FOR THE APPLICATION. MOUNT JUNCTION AND OUTLET BOXES FLUSH WITH FINISH SURFACES UNLESS OTHERWISE NOTED. WHERE MOUNTING HEIGHTS ARE GIVEN, THEY SHALL BE MEASURED FROM THE FINISHED FLOOR TO THE CENTER OF THE BOX. ALL BOXES SHALL BE SIZED PER NEC ARTICLE 314. ALL OUTLET AND JUNCTION BOXES SHALL HAVE A COVER PLATE, PROVIDED BY THE ELECTRICAL CONTRACTOR. OUTLET BOXES IN RATED WALLS SHALL BE INSTALLED IN ACCORDANCE WITH NORTH CAROLINA BUILDING CODE 714.3.2 (MAXIMUM BOX SIZE OF 16 SQUARE in AND MAXIMUM OF SIX (6) BOXES PER 100 SQUARE FEET). INSTALL OUTLET BOXES IN RATED WALLS SUCH THAT OPENINGS OCCUR IN ONE SIDE ONLY WITHIN ANY GIVEN STUD SPACE. ALL CLEARANCES BETWEEN THE OUTLET BOX AND THE GYPSUM BOARD SHALL BE FILLED WITH JOINT COMPOUND OR OTHER APPROVED FIRE STOP MATERIAL. FLUSH MOUNTED JUNCTION BOXES IN ADJACENT ROOMS SHALL NOT BE MOUNTED BACK-TO-BACK. SURFACE MOUNTED FIXTURES SHALL BE FED THROUGH FLUSH MOUNTED 4IN OCTAGONAL OR SQUARE BOXES.
12. ALL CONDUIT, BOXES, AND ELECTRICAL EQUIPMENT SHALL BE FIRMLY AND SECURELY FASTENED TO OR SUPPORTED FROM THE BUILDING STRUCTURAL MEMBERS OR EMBEDDED IN CONCRETE OR MASONRY. ELECTRICAL SUPPORTS SHALL NOT BE ATTACHED TO DUCTWORK, PIPING, OR THEIR SUPPORTS. HANGERS SHALL BE CADDLIG ITEMS COMPATIBLE WITH AND SUITABLE FOR THE INTENDED USE. FOR METAL ROOF DECK INSTALLATIONS, 1 in EMT CONDUIT MAXIMUM AND 4 in JUNCTION BOXES MAXIMUM MAY BE SUPPORTED BY DECKING. THE SUSPENDED CEILING SYSTEM SHALL NOT BE USED FOR THE SUPPORT OF ELECTRICAL RACEWAY SYSTEMS OR SUPPORT OF COMMUNICATIONS OR DATA SYSTEMS WIRING. CONTRACTOR SHALL COMPLY WITH 1913 OF THE NORTH CAROLINA GENERAL CONSTRUCTION BUILDING CODE.
13. ABANDONED CONDUIT AND BOXES SHALL HAVE ALL ELECTRICAL WIRING REMOVED COMPLETELY AND NOT JUST "MADE SAFE." CONDUIT AND BOXES SHALL BE REMOVED WHERE PRACTICAL WITHOUT CREATING ADDITIONAL DEMOLITION/RESTORATION WORK FOR OTHER TRADES.
14. WHERE CONDUCTORS ARE RUN IN PARALLEL, THE EC SHALL COMPLY WITH NEC 310.4.
15. ALL RECEPTACLES LOCATED WITHIN DWELLING UNITS SHALL HAVE AFCI PROTECTION IN ACCORDANCE WITH SECTION 210.12 OF THE NEC. RECEPTACLES IN DWELLING UNITS SHALL BE LISTED TAMPER-RESISTANT PER NEC 406.12.
16. TRANSFER EQUIPMENT SHALL BE LISTED FOR THE PARTICULAR USE (I.E., "EMERGENCY" OR "STANDBY") AND SHALL BE APPROVED BY THE AUTHORITY HAVING JURISDICTION.
17. PROVIDE AN UNDERGROUND PVC CONDUIT SYSTEM FOR TELEPHONE SERVICE WITH PULL WIRES. ELECTRICAL CONTRACTOR SHALL COORDINATE WITH TELEPHONE UTILITY REGARDING ADDITIONAL FACILITIES REQUIRED FOR THE SERVICE INSTALLATION.
18. INSTALL ONE (1) 3/4 in FIRE RETARDANT TREATED PLYWOOD BACKBOARD WHERE INDICATED ON THE DRAWINGS FOR THE USE BY THE TELEPHONE SYSTEM. PROVIDE A 120 VOLT RECEPTACLE ADJACENT TO THE TELEPHONE BOARD. GROUND ALL TELEPHONE AND COMMUNICATIONS CIRCUITS PER NEC 800.
19. ALL TELEPHONE AND COMMUNICATIONS OUTLETS AND RACEWAYS ARE ROUGH-INS ONLY. EACH TELEPHONE AND COMMUNICATIONS OUTLET SHALL BE A 4 in SQUARE BY 2-1/8 in DEEP BOX WITH 3/4 in KNOCK-OUTS AND A 3/4 in CONDUIT STUBBED FROM THE OUTLET BOX TO ABOVE THE CEILING. PROVIDE A NON-METALLIC INSULATING BUSHING ON ALL CONDUITS STUBBED ABOVE THE CEILING. PROVIDE A BLANK COVER PLATE ON ALL OUTLET BOXES.
20. ELECTRICAL CONTRACTOR SHALL INSTALL DISCONNECT SWITCHES IN SIGHT OF ALL HARDWIRED EQUIPMENT AND APPLIANCES OR PROVIDE BREAKERS CAPABLE OF BEING LOCKED IN THE OPEN POSITION PER NEC 422.31. FOR MOTOR DRIVEN APPLIANCES, PROVIDE A DISCONNECTING MEANS PER NEC 422.31 AND 430 PART IX. WHERE AN INDIVIDUAL DISCONNECT SWITCH, CIRCUIT BREAKER, STARTER, ETC. IS SHOWN ON THE PLANS ADJACENT TO ITS LOAD AND NOT LOCATED ON A WALL, PROVIDE NECESSARY MATERIALS AND LABOR TO SUPPORT THE DEVICE.
21. ELECTRICAL CONTRACTOR SHALL FIELD IDENTIFY ALL SWITCH BOARD, PANEL BOARDS, CONTROL PANELS, METER SOCKETS, ETC. TO WARN QUALIFIED PERSONS OF POTENTIAL ELECTRICAL ARC FLASH HAZARDS PER 110.16 OF NEC.
22. ELECTRICAL CONTRACTOR SHALL PROVIDE NAMEPLATES FOR IDENTIFICATION OF ALL EQUIPMENT, SWITCHES, PANELS, ETC. THE NAMEPLATES SHALL BE LAMINATED PHENOLIC PLASTIC, BLACK FRONT, AND BACK WITH WHITE CORE, WHITE ENGRAVED LETTERS (1/4 in MINIMUM) ETCHED INTO THE WHITE CORE. ELECTRICAL CONTRACTOR SHALL PROVIDE A TYPE WRITTEN DIRECTORY CARD THAT ACCURATELY IDENTIFIES CIRCUITS INSIDE EACH PANEL. HANDWRITTEN LABELS ARE NOT ACCEPTABLE.
23. IN ACCORDANCE WITH SECTION F510 OF THE NC FIRE PREVENTION CODE, TESTING WILL BE REQUIRED TO DETERMINE SATISFACTORY FIRST RESPONDER RADIO SIGNAL STRENGTH INSIDE EACH BUILDING ON SITE. TESTING WILL NEED TO EITHER BE COMPLETED BY A COUNTY FIRE INSPECTOR (DONE BY REQUESTING A COURTESY INSPECTION) OR A CERTIFIED 3RD PARTY. TESTING SHALL TAKE PLACE AT BOTH 80% PROJECT COMPLETION AND AGAIN AT 100% COMPLETION. IF UNACCEPTABLE SIGNAL DEGRADATION IS PRESENT AT EITHER 80% OR 100% INSPECTION, THEN AN ACCEPTABLE BOOSTER SYSTEM SHALL BE ADDED TO THE BUILDING DESIGN AT THAT TIME.

ELECTRICAL NOTES 2

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NORTH CAROLINA PROFESSIONAL SEAL 039765 ENGINEER CHARLES M. KISTER 5/24/23

KILIAN ENGINEERING, INC. CORPORATE SEAL NORTH CAROLINA

A UP FIT FOR
MERRY HILL - MIDWAY VFD
109 NC 45, WINDSOR, NC

REVISION:

ISSUED:
FOR PERMITTING & CONSTRUCTION 5/24/23

DRAWN BY: JSL
CHECKED BY: KWK/CMK

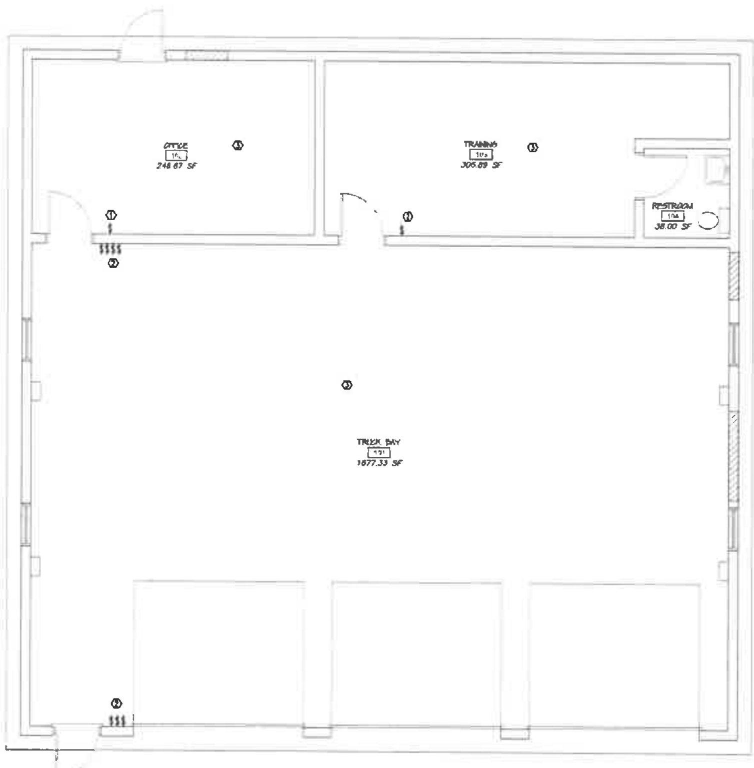
ELECTRICAL SCHEDULE & NOTES

SHEET NO
E1

PROJECT NO: 230280

LIGHTING DEMO PLAN HEX NOTES

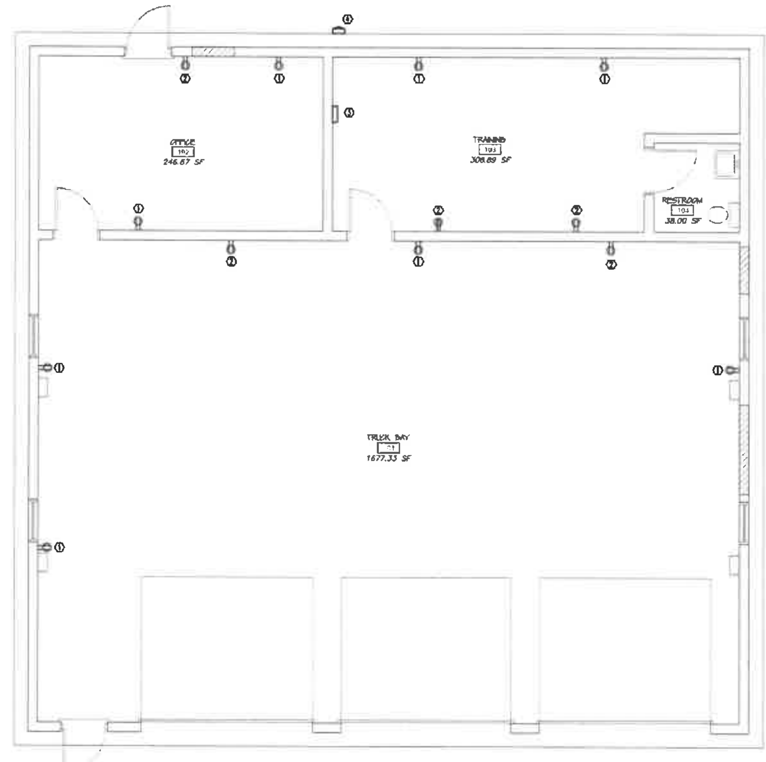
1. SWITCH IS EXISTING TO REMAIN, EC TO CLEAN, INSPECT, & VERIFY IN GOOD WORKING ORDER.
2. EC TO DEMO SWITCH(ES) BACK TO BREAKER.
3. ALL EXISTING LIGHT FIXTURES TO BE DEMO'D BACK TO BREAKER.



LIGHTING DEMO PLAN - SCALE: 1/4"=1' 1

POWER DEMO PLAN HEX NOTES

1. RECEPTACLE EXISTING TO REMAIN. EC TO CLEAN, INSPECT, & VERIFY IN GOOD WORKING ORDER.
2. EC TO DEMO RECEPTACLE BACK TO BREAKER.
3. EC TO DEMO EXISTING PANEL.
4. EC TO DEMO EXISTING METER.



POWER DEMO PLAN - SCALE: 1/4"=1' 2

Kilian Engineering, Inc.

UP FIT FOR
MERRY HILL - MIDWAY VFD

REVISION

ISSUED

ELECTRICAL DEMO PLANS

SHEET NO
E2

PROJECT NO: 230280

LIGHTING PLAN HEX NOTES

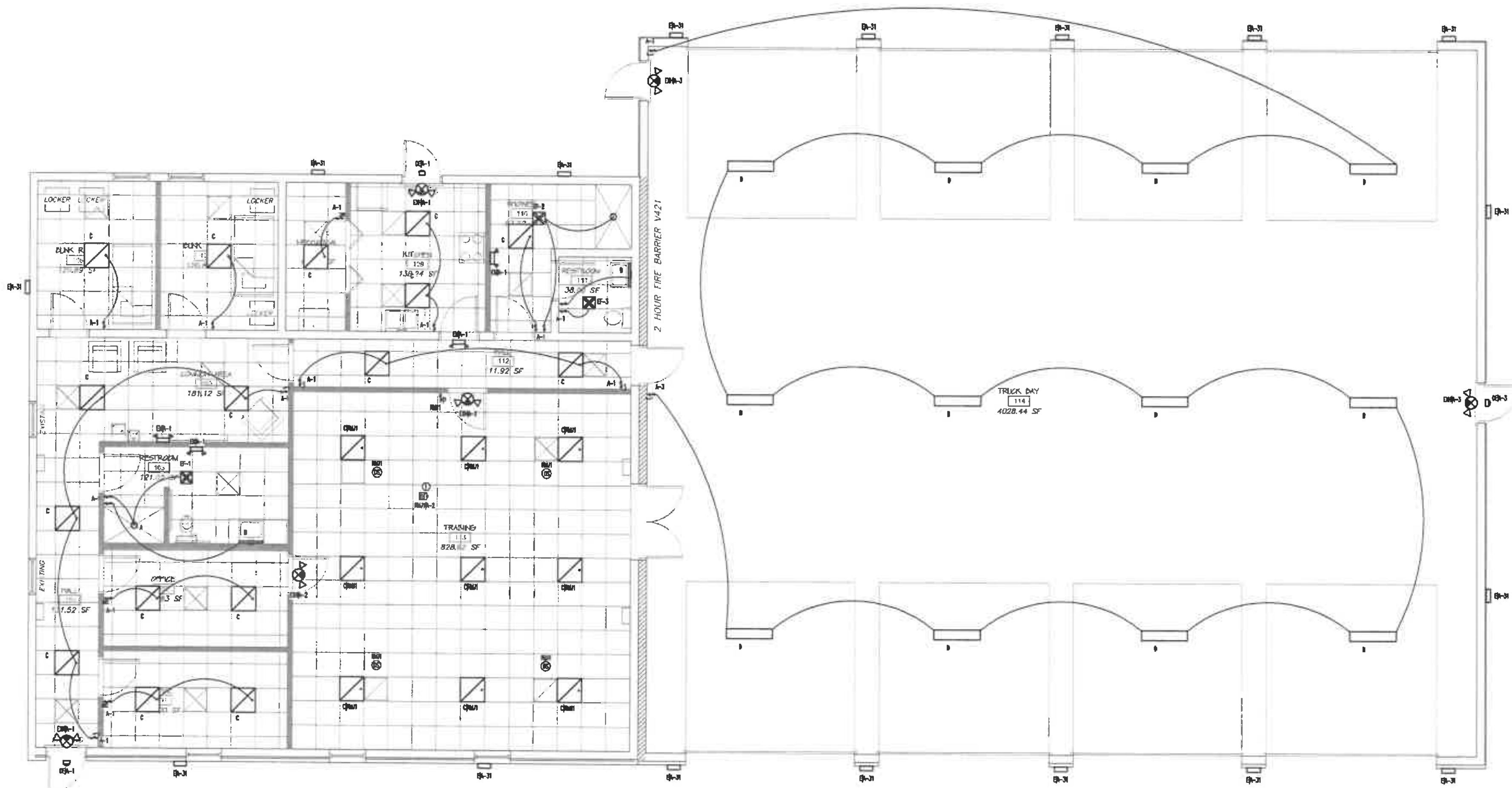
1. RELAY MODULE LOCATED ABOVE CEILING.

NOTE: ALL EXTERIOR WALL PACKS TO BE RUN THROUGH PHOTOCELL.

LIGHTING CIRCUIT DESIGNATIONS

A - A - # - D

- LIGHT FIXTURE → A
- PANEL DESIGNATION → A
- CIRCUIT DESIGNATION → #
- SWITCH DESIGNATION → D



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

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SEAL

SEAL

A UPFIT FOR

MERRY HILL - MIDWAY VFD

109 NC 45, WINDSOR, NC

REVISION:

ISSUED:

FOR PERMITTING & CONSTRUCTION 5/24/23

DRAWN BY: JGL
CHECKED BY:

LIGHTING PLAN

SHEET NO.

E3

PROJECT NO: 230280

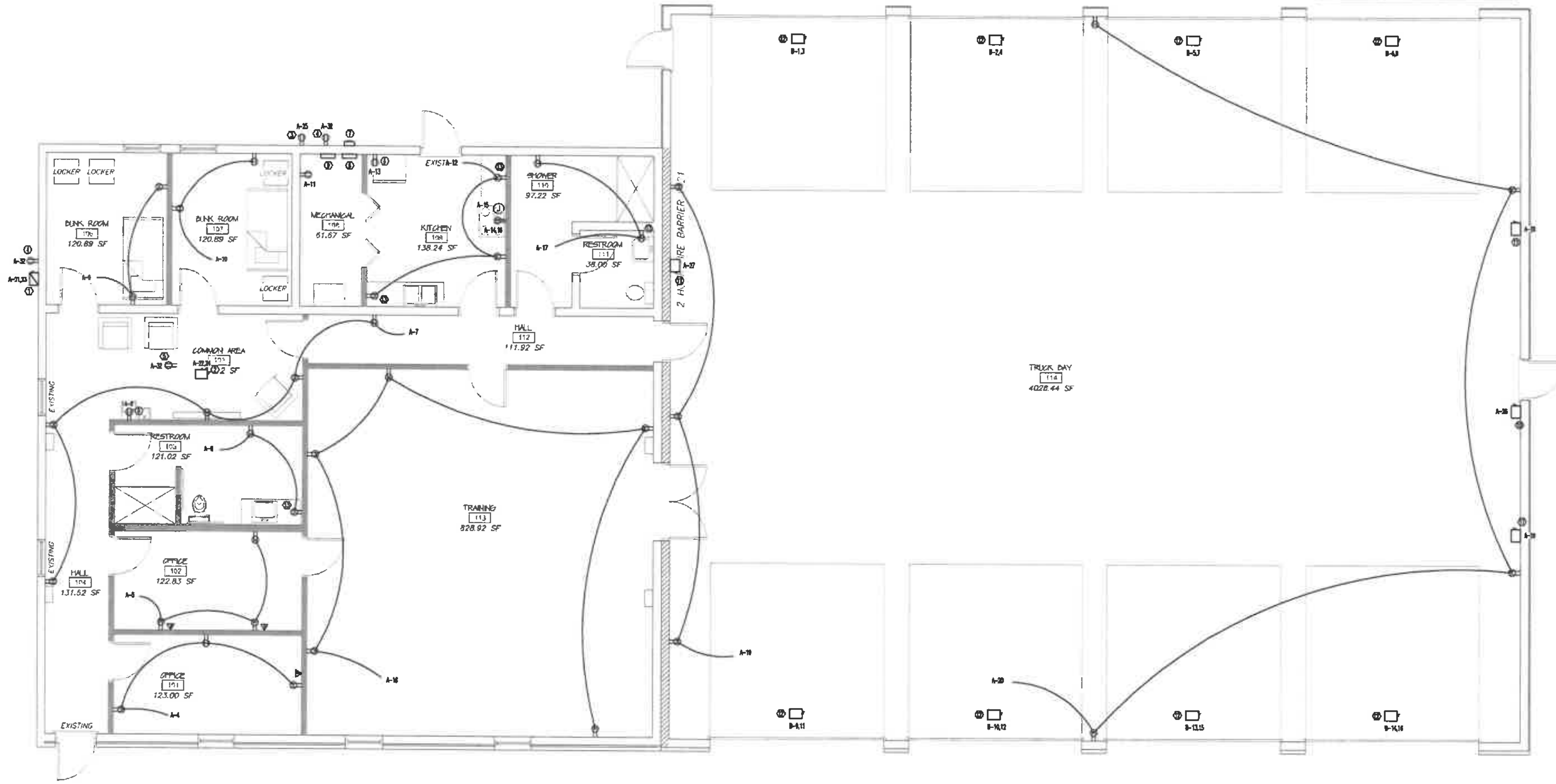
POWER CIRCUIT DESIGNATIONS

A - #

PANEL DESIGNATION
CIRCUIT DESIGNATION

POWER PLAN HEX NOTES

1. 240V, 1Φ, NEMA 3R, 60A DISCONNECT FUSED AT 45A FOR CU-1. EC TO MOUNT AT ACCESSIBLE LOCATION.
2. 240V, 1Φ, NEMA 1, 60A DISCONNECT FOR AHU-1. EC TO MOUNT AT ACCESSIBLE LOCATION.
3. WP/GFCI RECEPTACLE FOR HP-1.
4. WP/GFCI SERVICE RECEPTACLE.
5. GFCI SERVICE RECEPTACLE LOCATED IN CEILING.
6. RECEPTACLE ON GFCI BREAKER.
7. NEW METER.
8. NEW PANEL A
9. NEW PANEL B.
10. 120V, 1Φ, NEMA 1, 30A DISCONNECT FOR EF-6. EC TO MOUNT AT ACCESSIBLE LOCATION.
11. 120V, 1Φ, NEMA 1, 30A DISCONNECT FOR UH. EC TO MOUNT AT ACCESSIBLE LOCATION.
12. 208V, 1Φ, NEMA1, 30A DISCONNECT FOR GARAGE DOOR OPENER. EC TO MOUNT AT ACCESSIBLE LOCATION.
13. GFCI RECEPTACLE MOUNTED 42" A.F.F.



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

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SEAL

SEAL

A UP FIT FOR

MERRY HILL - MIDWAY VFD

109 NC 45, WINDSOR, NC

REVISION:

ISSUED:

FOR PERMITTING & CONSTRUCTION 5/24/23

DRAWN BY: JSL
CHECKED BY: MeM/CMA

POWER PLAN

SHEET NO.

E4

PROJECT NO: 230280

NEW PANEL A								
CKT	LOAD	BKR	LOAD KVA	PH	LOAD KVA	BKR	LOAD	CKT
1	OFFICE/BATHROOM/CORRIDOR LTS	20/1	0.59	A	0.30	20/1	TRAINING LTS	2
3	TRUCK BAY LTS	20/1	1.11	B	0.54	20/1	OFFICE 101 RECEPTS	4
5	OFFICE 102 RECEPTS	20/1	0.54	A	0.36	20/1	RESTROOM 103 RECEPTS	6
7	HALL/CORRIDOR AREA RECEPTS	20/1	0.90	B	0.18	20/1	DRINKING FOUNTAIN	(8)
9	BUNK 106 RECEPTS	20/1	0.36	A	0.36	20/1	BUNK 107 RECEPTS	10
11	MECHANICAL 108 RECEPT	20/1	0.18	B	0.54	20/1	KITCHEN RECEPTS	12
(13)	REFRIGERATOR	20/1	1.20	A	3.60	40/2	RANGE	14
15	RANGE HOOD	20/1	0.17	B	3.60			16
17	SHOWER/RESTROOM RECEPTS	20/1	0.36	A	0.90	20/1	TRAINING RECEPTS	18
19	TRUCK BAY RECEPTS	20/1	0.54	B	0.72	20/1	TRUCK BAY RECEPTS	20
21	CU-1	45/2	3.14	A	6.04	60/2	AHU-1	22
23			3.14	B	6.04			24
25	UH-1	15/1	0.60	A	0.47	15/1	EF-5	26
27	UH-1	15/1	0.81	B	0.81	15/1	UH-2	28
29	UH-3	15/1	0.81	A	1.20	20/1	SIGN	30
31	EXTERIOR LTS	20/1	0.60	B	0.54	20/1	SERVICE RECEPTS	32
33	SPACE		0.00	A	0.00		SPACE	34
35	SPACE		0.00	B	0.00		SPACE	36
37	SPACE		0.00	A	0.00		SPACE	38
39	SPACE		0.00	B	0.00		SPACE	40
41	SPACE		0.00	A	0.00		SPACE	42
			KVA	PH	AMPS			
			21.6	A	180			
			21.3	B	178			
		VOLTAGE/PHASE			120/240, 1P, 3W			
		BUS RATING			200A			
		MAIN CIRCUIT BREAKER RATING			200A			
		AIC RATING			22K			
		SERVICE ENTRANCE RATED			YES			
		ENCLOSURE			NEMA 1			
		MOUNTING			SURFACE			

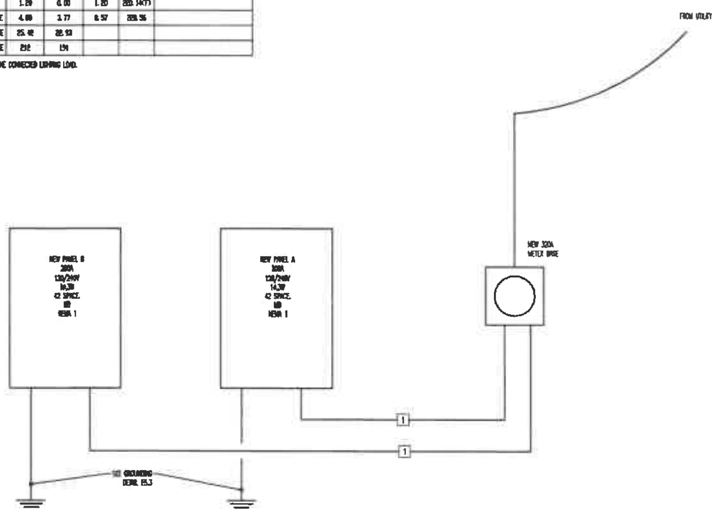
○ GFCI BREAKER

NEW PANEL B								
CKT	LOAD	BKR	LOAD KVA	PH	LOAD KVA	BKR	LOAD	CKT
1	GARAGE DOOR OPENER	30/2	1.92	A	1.92	30/2	GARAGE DOOR OPENER	2
3			1.92	B	1.92			4
5	GARAGE DOOR OPENER	30/2	1.92	A	1.92	30/2	GARAGE DOOR OPENER	6
7			1.92	B	1.92			8
9	GARAGE DOOR OPENER	30/2	1.92	A	1.92	30/2	GARAGE DOOR OPENER	10
11			1.92	B	1.92			12
13	GARAGE DOOR OPENER	30/2	1.92	A	1.92	30/2	GARAGE DOOR OPENER	14
15			1.92	B	1.92			16
17	SPARE	20/1	0.00	A	0.00	20/1	SPARE	18
19	SPARE	20/1	0.00	B	0.00	20/1	SPARE	20
21	SPACE		0.00	A	0.00		SPACE	22
23	SPACE		0.00	B	0.00		SPACE	24
25	SPACE		0.00	A	0.00		SPACE	26
27	SPACE		0.00	B	0.00		SPACE	28
29	SPACE		0.00	A	0.00		SPACE	30
31	SPACE		0.00	B	0.00		SPACE	32
33	SPACE		0.00	A	0.00		SPACE	34
35	SPACE		0.00	B	0.00		SPACE	36
37	SPACE		0.00	A	0.00		SPACE	38
39	SPACE		0.00	B	0.00		SPACE	40
41	SPACE		0.00	A	0.00		SPACE	42
			KVA	PH	AMPS			
			15.4	A	128			
			15.4	B	128			
		VOLTAGE/PHASE			120/240, 1P, 3W			
		BUS RATING			200A			
		MAIN CIRCUIT BREAKER RATING			200A			
		AIC RATING			22K			
		SERVICE ENTRANCE RATED			YES			
		ENCLOSURE			NEMA 1			
		MOUNTING			SURFACE			

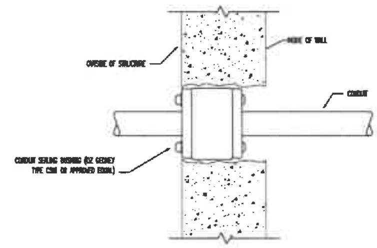
NEC ELECTRIC DEMAND SUMMARY 120/240V, 1P, 3W						
EQUIPMENT	DEMAND FACTOR	KVA A	KVA B	LOAD KVA	NEC REFERENCE	NOTES/CALCULATIONS
LIGHTING	100%	4.32	4.32	8.64	220.12	6648 SF X 1.3 VA/SF
RECEPTACLES ≤ 10 KVA	100%	3.24	3.24	6.48	220.44	
RECEPTACLES > 10 KVA	50%	0.00	0.00	0.00	220.44	
HVAC	100%	11.26	11.60	22.86	—	BASED ON MCA
WATER HEATER	125%	0.60	0.00	0.60	422.13	STORAGE TANK (120 GAL @ 125%
SIGN	100%	1.20	0.00	1.20	220.14(F)	
KITCHEN EQUIPMENT	SEE CODE	4.80	3.77	8.57	220.56	
DEMAND KVA PER PHASE		25.42	22.93			
DEMAND AMPS PER PHASE		212	191			

THE CALCULATED LIGHTING LOAD EXCEEDS THE CONNECTED LIGHTING LOAD.

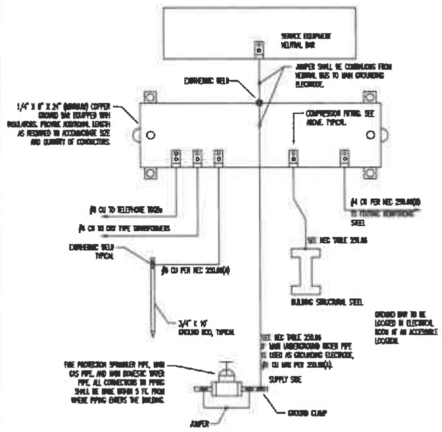
GENERAL FEEDER SCHEDULE		
MARK	WIRE AND CONDUIT	AMPS
1	3-3/0 CU, 2-1/2" C	200A



PANEL/POWER RISER DIAGRAMS - NO SCALE | 1

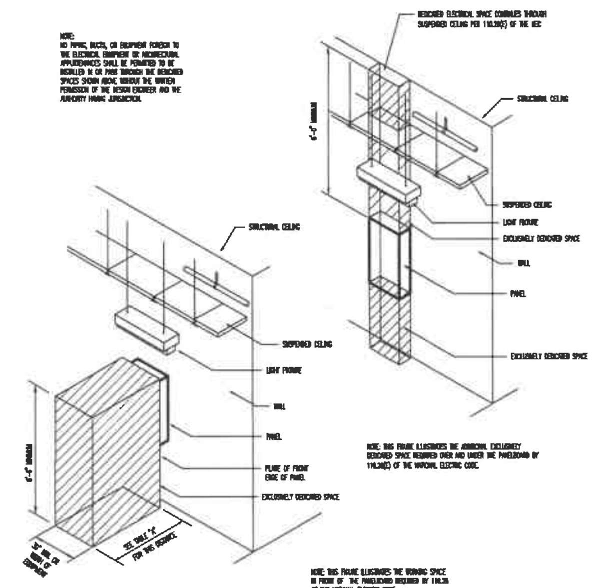


EXTERIOR WALL PENETRATION-NO SCALE | 2



GROUNDING DETAIL-NO SCALE | 3

NOTE:
NO PIPING, DUCTS, OR EQUIPMENT FOREIGN TO THE ELECTRICAL EQUIPMENT OR ARCHITECTURAL APPURTENANCES SHALL BE PERMITTED TO BE INSTALLED IN OR PASS THROUGH THE DEDICATED SPACES SHOWN ABOVE WITHOUT THE WRITTEN PERMISSION OF THE DESIGN ENGINEER AND THE AUTHORITY HAVING JURISDICTION.



NOTE: THIS FIGURE ILLUSTRATES THE ADDITIONAL EXCLUSIVELY DEDICATED SPACE REQUIRED OVER AND UNDER THE PANELBOARD BY 110.26(E) OF THE NATIONAL ELECTRIC CODE.

NOTE: THIS FIGURE ILLUSTRATES THE WORKING SPACE IN FRONT OF THE PANELBOARD REQUIRED BY 110.26 OF THE NATIONAL ELECTRIC CODE.

NOTE: WHERE THE CONDITIONS ARE AS FOLLOWS:

CONDITION 1 – EXPOSED LIVE PARTS ON ONE SIDE OF THE WORKING SPACE AND NO LIVE OR GROUNDED PARTS ON THE OTHER SIDE OF THE WORKING SPACE, OR EXPOSED LIVE PARTS ON BOTH SIDES OF THE WORKING SPACE THAT ARE EFFECTIVELY GUARDED BY INSULATING MATERIALS.

CONDITION 2 – EXPOSED LIVE PARTS ON ONE SIDE OF THE WORKING SPACE AND GROUNDED PARTS ON THE OTHER SIDE OF THE WORKING SPACE. CONCRETE, BRICK, OR TILE WALLS SHALL BE CONSIDERED AS GROUNDED.

CONDITION 3 – EXPOSED LIVE PARTS ON BOTH SIDES OF THE WORKING SPACE.

TABLE 110.26(A)(1) WORKING SPACE			
VOLTAGE TO GROUND, NOMINAL	MINIMUM CLEAR DISTANCE (FEET)		
	CONDITION 1	2	3
0-150	3	3	3
151-600	3	3-1/2	4

REQUIRED CLEARANCES-NO SCALE | 4

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A UP FIT FOR
MERRY HILL - MIDWAY VFD
100 NC 45, WINDSOR, NC

REVISION:

ISSUED:

PANEL/POWER RISER DIAGRAMS & DETAILS

SHEET NO.
E5

PROJECT NO: 230280