

# DRAWING INDEX:

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# BUILDING DATA:

BUILDING CODES:	MICHIGAN BUILDING CODE 2015 EDITION
	MECHANICAL - MICHIGAN MECHANICAL CODE 2018 EDITION
	PLUMBING - MICHIGAN PLUMBING CODE 2018 EDITION
	ELECTRICAL - NATIONAL ELECTRICAL CODE 2017 EDITION
USE GROUP	(E) EDUCATION
BUILDING AREA	EXISTING 4,366 SF
OCCUPANCY LOAD	201
CONSTRUCTION TYPE	TYPE-VB (NON-RATED)
ALLOWABLE AREA	EXISTING
SPRINKLER	NONE

# GENERAL NOTES:

- 1) DO NOT SCALE DRAWINGS. USE FIGURED DIMENSIONS ON DRAWINGS ONLY
- 2) CONTRACTOR SHALL VERIFY ALL DIMENSIONS PRIOR TO COMMENCING WORK
- 3) WORK SHALL CONFORM TO ALL GOVERNING CODES AND REGULATIONS

KEY TO DIMENSIONING:  
DIMENSIONS ARE SHOWN FROM FACE OF STUD TO FACE OF STUD OR FACE OF MASONRY UNLESS NOTED OTHERWISE.

## CLASSROOM RENOVATION FOR

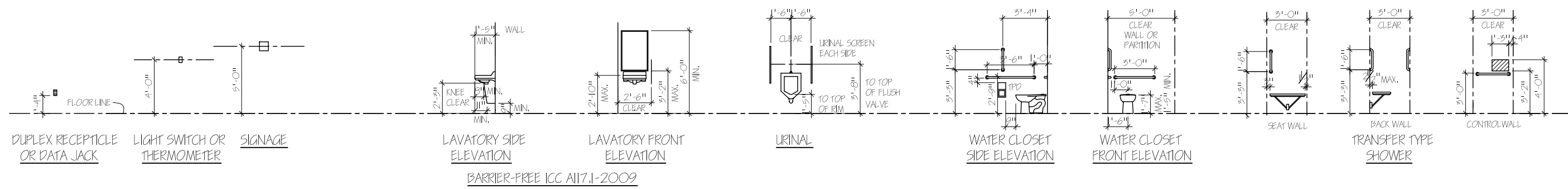
# SAGINAW CAREER COMPLEX

2100 WEISS STREET                      SAGINAW, MI 48602



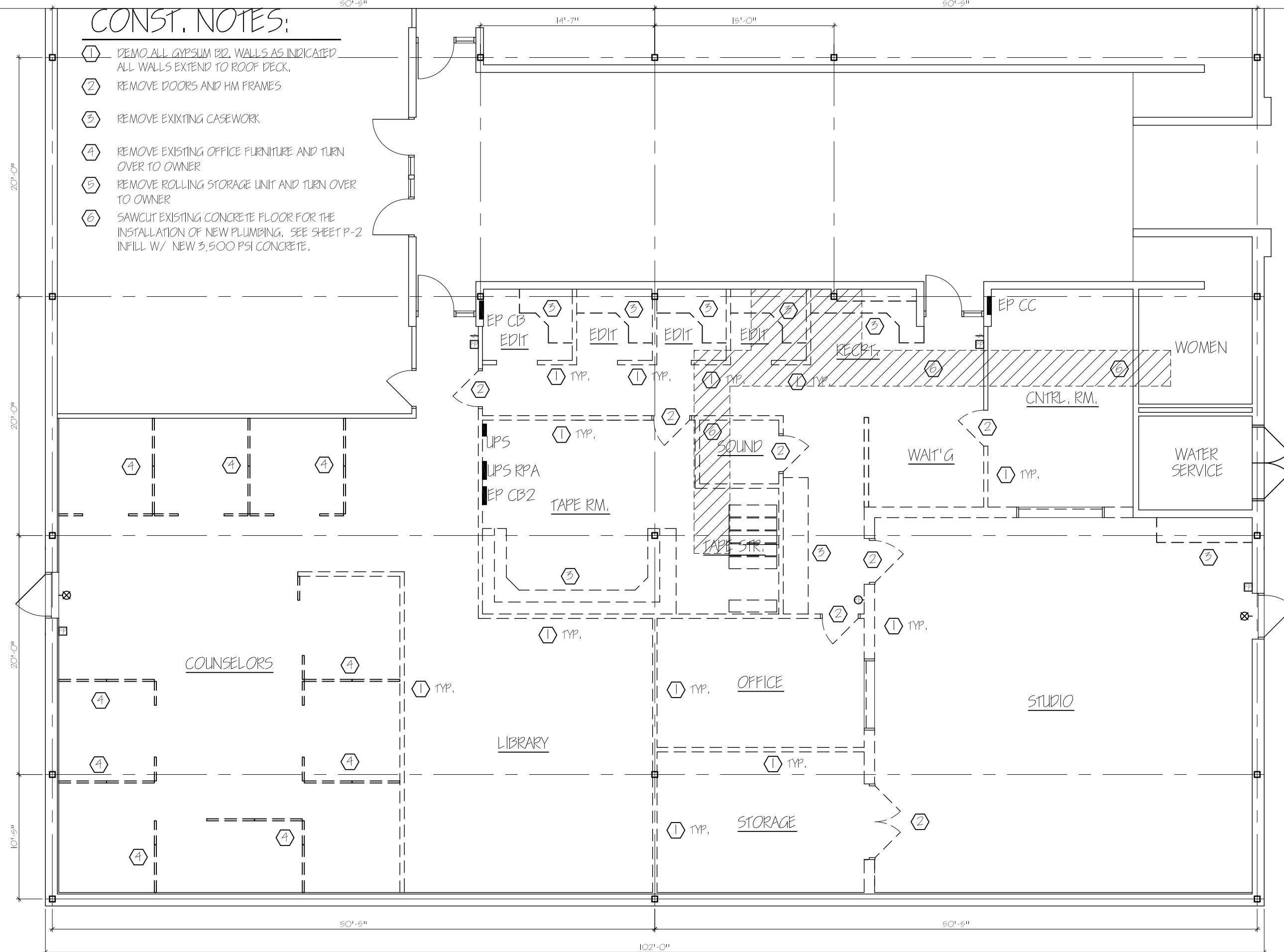
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## GENERAL LAYOUT INFORMATION AND TYPICAL MOUNTING HEIGHTS:



# CONST. NOTES:

- ① DEMO ALL GYPSUM BD. WALLS AS INDICATED. ALL WALLS EXTEND TO ROOF DECK.
- ② REMOVE DOORS AND HM FRAMES
- ③ REMOVE EXISTING CASEWORK
- ④ REMOVE EXISTING OFFICE FURNITURE AND TURN OVER TO OWNER
- ⑤ REMOVE ROLLING STORAGE UNIT AND TURN OVER TO OWNER
- ⑥ SAWCUT EXISTING CONCRETE FLOOR FOR THE INSTALLATION OF NEW PLUMBING. SEE SHEET P-2 INFILL W/ NEW 3,500 PSI CONCRETE.



## DEMOLITION PLAN

SCALE: 1/8" = 1'-0"

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pinconning, michigan 48650

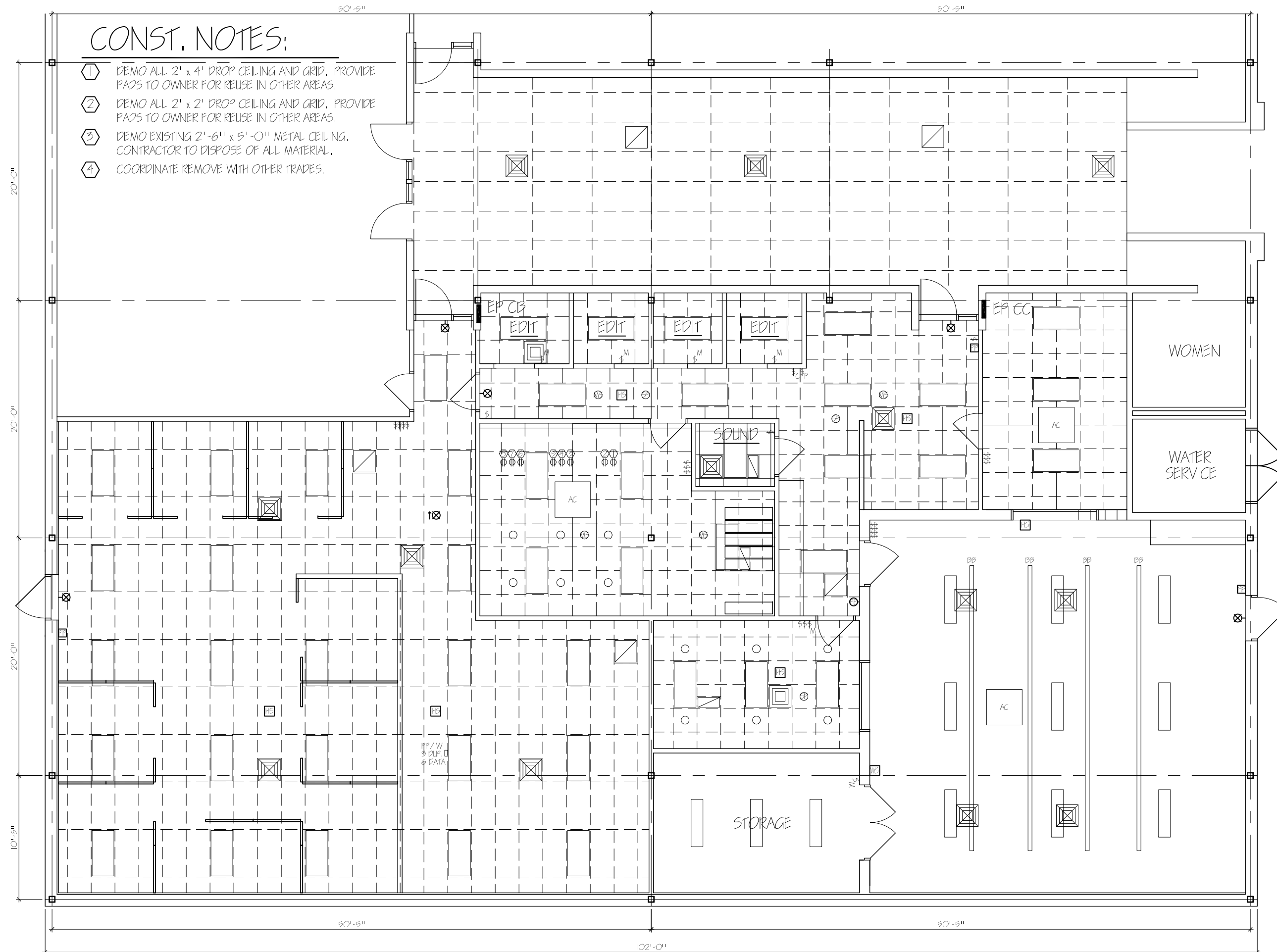
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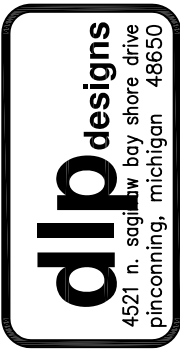
# CONST. NOTES:

- ① DEMO ALL 2' x 4" DROP CEILING AND GRID. PROVIDE PADS TO OWNER FOR REUSE IN OTHER AREAS.
- ② DEMO ALL 2' x 2" DROP CEILING AND GRID. PROVIDE PADS TO OWNER FOR REUSE IN OTHER AREAS.
- ③ DEMO EXISTING 2'-6" x 5'-0" METAL CEILING. CONTRACTOR TO DISPOSE OF ALL MATERIAL.
- ④ COORDINATE REMOVE WITH OTHER TRADES.



## CEILING DEMOLITION PLAN

SCALE: 1/8" = 1'-0"

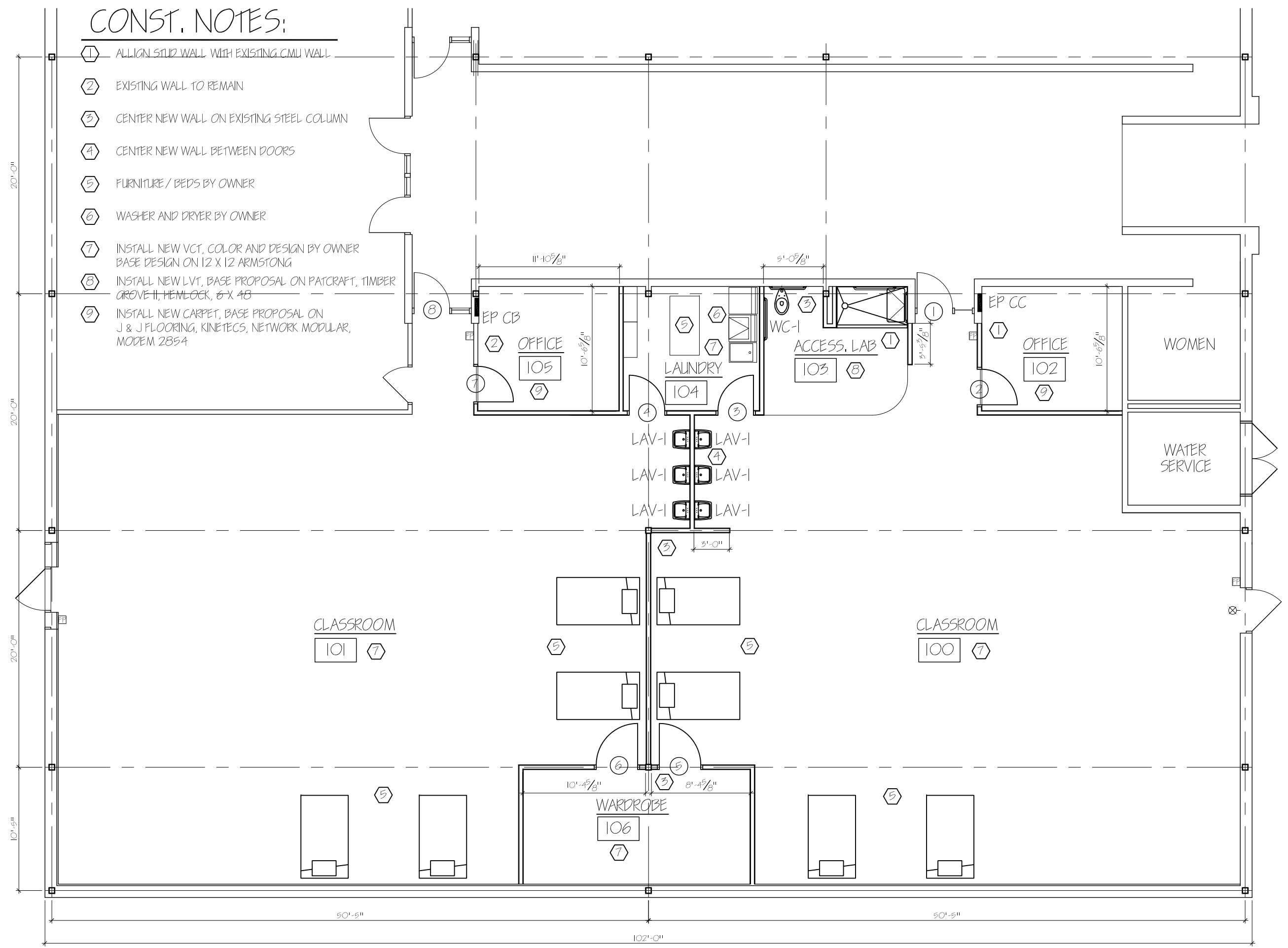


CLASSROOM RENOVATION FOR  
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# CONST. NOTES:

- ① ALIGN STUD WALL WITH EXISTING CMU WALL
- ② EXISTING WALL TO REMAIN
- ③ CENTER NEW WALL ON EXISTING STEEL COLUMN
- ④ CENTER NEW WALL BETWEEN DOORS
- ⑤ FURNITURE / BEDS BY OWNER
- ⑥ WASHER AND DRYER BY OWNER
- ⑦ INSTALL NEW VCT, COLOR AND DESIGN BY OWNER  
BASE DESIGN ON 12 X 12 ARMSTRONG
- ⑧ INSTALL NEW LVT, BASE PROPOSAL ON PATCRAFT, TIMBER  
GROVE II, HEMLOCK, 6" X 48
- ⑨ INSTALL NEW CARPET, BASE PROPOSAL ON  
J & J FLOORING, KINETECS, NETWORK MODULAR,  
MODEM 2854



## NEW FLOOR PLAN

SCALE: 1/8" = 1'-0"

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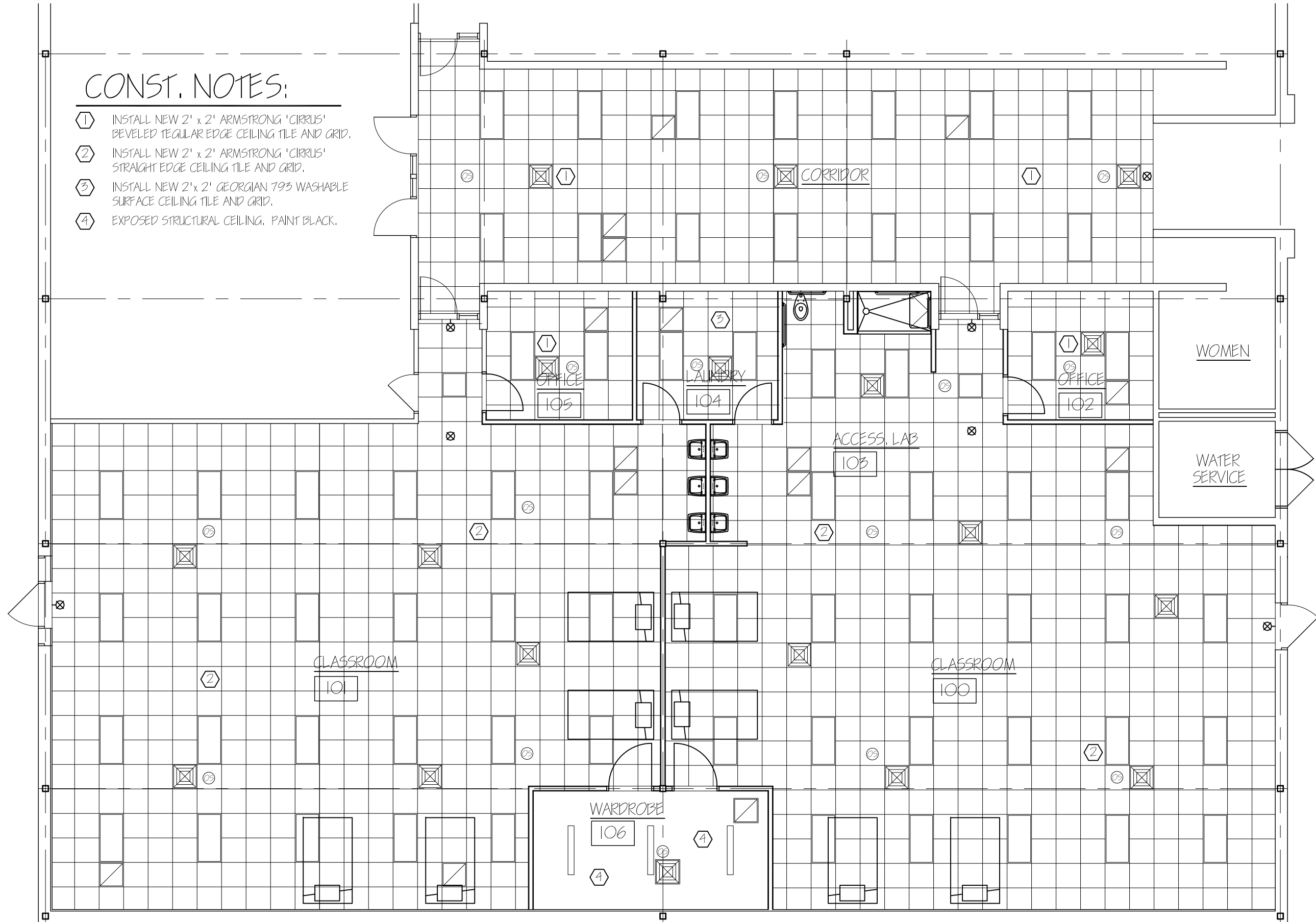
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# CONST. NOTES:

- ① INSTALL NEW 2' x 2' ARMSTRONG 'CIRRUS' BEVELED REGULAR EDGE CEILING TILE AND GRID.
- ② INSTALL NEW 2' x 2' ARMSTRONG 'CIRRUS' STRAIGHT EDGE CEILING TILE AND GRID.
- ③ INSTALL NEW 2' x 2' GEORGIAN 793 WASHABLE SURFACE CEILING TILE AND GRID.
- ④ EXPOSED STRUCTURAL CEILING. PAINT BLACK.



## REFLECTED CEILING PLAN

SCALE: 1/8" = 1'-0"

FINISH SCHEDULE															
NO.	ROOM NAME	FLOORING				BASE		WALLS			CEILING			CEILING HT. REMARKS	
		VINYL COMPOSITION	VINYL PLANK	CERAMIC TILE	CONCRETE	CONCRETE SEALER	RUBBER	CERAMIC TILE	BLOCK	CERAMIC TILE	GYPSUM BOARD	PAINTED	EXPOSED CONST.		DROP CEILING
100	CLASSROOM	X													10'
101	CLASSROOM	X													10'
102	OFFICE		X					X	X	X	X	X	X		8'-0"
103	ACCESS LAB		X					X	X	X	X	X	X		10'
104	LAUNDRY		X					X	X	X	X	X	X		8'-0"
105	OFFICE		X					X	X	X	X	X	X		8'-0"
108	WARDROBE	X						X		X	X	X	X	X	EXPOSED

DOOR SCHEDULE							
DR. NO.	SIZE	TYPE	DR. TYPE	FRAME	FR. TYPE	HDW. SET	DESCRIPTION
1	EXISTING	SC WD	A	HM	<E>	<E>	EXISTING
2	3'-0" x 7'-0"	SC WD	A	HM	2	1	OFFICE
3	3'-0" x 7'-0"	SC WD	A	HM	2	2	STORAGE
4	3'-0" x 7'-0"	SC WD	A	HM	2	2	STORAGE
5	3'-6" x 7'-0"	SC WD	A	HM	2	2	STORAGE
6	3'-6" x 7'-0"	SC WD	A	HM	2	2	STORAGE
7	3'-0" x 7'-0"	SC WD	A	HM	2	1	OFFICE
8	EXISTING	SC WD	A	HM	<E>	<E>	EXISTING

Note: New wood doors to match existing in finish and color.

**GYPSUM WALL BOARD:**

ASTM C36 STANDARD SPECIFICATION FOR GYPSUM WALLBOARD TAPERD EDGE TYPE. GYPSUM ASSOCIATION GA 214. RECOMMENDED LEVELS OF GYPSUM BOARD FINSH AND 216 APPLICATION AND FINISHING OF GYPSUM PANEL PRODUCTS.

JOINT REINFORCING TAPE AND COMPOUND, ASTM C 475 STANDARD SPECIFICATION FOR JOINT TREATMENT MATERIALS FOR GYPSUM WALLBOARD CONSTRUCTION.

SCREWS TYPE 'S' TO MEET THE MINIMUM REQUIREMENTS OF ASTM C646 MIN. SPACING 12" O.C. FOR CEILINGS, 15" FOR WALLS.

APPLICATION OF GYPSUM BOARD SHALL CONFORM TO STANDARD SPECIFICATION FOR APPLICATION AND FINISHING OF WALLBOARD LEVEL 4 FINISH.

**ACOUSTICAL TILE CEILING:**

AR,STRONG 'CIRRUS' MINERAL FIBER MEDIUM TEXTURE HIGH NRC CONFORMING TO ASTM E1264 CLASSIFICATION TYPE III FORM I, PATTERN E I, FIRE CLASS A FIRE CLASSIFICATION ASTM E84 FLAME SPREAD INDEX OF 25 OR LESS, SMOKE DEVELOPED INDEX OF 50 OR LESS. OFFICE: ITEM NO. 576 2/16 BEVELED REGULAR EDGE 24x24x1 1/2" W/ NRC 0.70 AND CAC 40. CLASSROOM: SAME AS ABOVE ONLY SQUARE EDGE. SUSPENSION SYSTEM PRELUDE 5/16 FACE, 2'x2' STEEL GRID FACTORY WHITE BAKED ENAMEL FINISH. INSTALL GRID SYSTEM WITH LESS THAN 1/360 DEFLECTION OR APPROVED EQUAL. LAUNDRY: GEORGIAN 793 WITH WASHABLE SURFACE.

**CARPET:**

CARPETING SHALL SATISFY HUD/ FHA STANDARD FOR CARPET CERTIFICATION PROGRAM UM44d/ UM72 BULLETINS AS PUBLISHED BY DEPARTMENT OF HOUSING

AND URBAN DEVELOPMENT, FEDERAL HOUSING AUTHORITY. CARPET SHALL DISSIPATE UNWANTED STATIC ELECTRICITY, AND PREVENT STATIC BUILD UP IN EXCESS OF 3.0 KV AT 70° F, 20% RELATIVE HUMIDITY, AATCC-134 FLAMMABILITY, PASSES DOC-FF-1-70 PILL TEST, MEETS NFPA CLASS I WHEN TESTED UNDER ASTM E-648 AND NBS SMOKE CHAMBER NFPA-248 450 OR LESS FLAMING MODE.

CARPET 23 OZ. TUFTED YARN LOOPED ECO SOLUTION NYLON FILAMENT 100% SOLUTION DIED WITH INTEGRAL CUSHION BACKING FOR DIRECT GLUE DOWN.

**RESILIENT FLOORING:**

RESILIENT FLOORING MATERIALS SHALL SATISFY RATINGS OF 25 OR LESS FOR FLAME SPREAD CHARACTERISTICS AS TESTED UNDER ASTM TEST E84-70 "STANDARD METHOD OF TEST FOR SURFACE BURNING CHARACTERISTICS OF BUILDING MATERIALS".

**PAINT:**

PAINT WITH COLORS AS SELECTED. ALL SURFACES TO BE DRY AND FREE FROM FOREIGN MATERIALS PRIOR TO START OF WORK. PREPARE ALL SURFACES WITH SPACKLING OR OTHER, AND SAND TO MAKE SURE THERE IS A SMOOTH LEVEL SURFACE.

INTERIOR PAINT GYPSUM WALL AND CEILING BOARD, 1 COAT TINTED PRIMER, 2 COATS LOW VOC LATEX SEMI-GLOSS.

INTERIOR DOORS WOOD PREFINISHED. FRAME-2 COATS ALKYD BASE SEMI-GLOSS.

PAINT INTERIOR PIPING, DUCTWORK, AND STRUCTURE FLAT BLACK WHERE EXPOSED TO VIEW.

HARDWARE				
<b>HARDWARE SET NO. 1 (OFFICE DOORS)</b>				
EACH TO HAVE:				
3 EA	HINGE	SBB1HW 4.5 x 4.5	852	IVE
1 EA	MORTISE LOCKSET	L9060 OFFICE	US26D	SCH
<b>HARDWARE SET NO. 2 (STORGE/LAUNDRY DOORS)</b>				
EACH TO HAVE:				
3 EA	HINGE	SBB1HW 4.5 x 4.5	852	IVE
1 EA	MORTISE LOCKSET	L9060 STOREROOM	US26D	SCH
<b>KEY</b>				
IVE	IVES	ALLEGION		
SCH	SCHLAGE	ALLEGION		
* Keying to match Saginaw Public Schools Best Key locking series.				

**STEEL DOOR FRAMES:**

ALL FRAMES HOLLOW METAL, 18 GA. MINIMUM METAL THICKNESS, BONDERIZE FACTORY PRIME, REINFORCE FOR HARDWARE AND KNOCKOUT. SUPPLY WITH VINYL SILENCERS AND ADJUSTABLE LOCK STRIKE. UTILIZE 16 GA. FLOOR CLIPS AND JAMB ANCHORS. ALL WORK IN ACCORDANCE WITH STEEL DOOR INSTITUTES SPEC. SDA 100.

**FIRE RATED CAULKING:**

AS MANUFACTURED BY USG, 3M OR EQUIVALENT. CAULK AROUND ALL PIPE, WIRE, CABLE, DUCTS, ETC. PENETRATING FIRE RATED WALLS.

PIPE AND CONDUIT FIRE WALL PENETRATIONS AS PER U.I. WL 1087, CABLE FIRE WALL PENETRATIONS AS PER U.I. WL 3034 DUCT WORK FIRE WALL PENETRATIONS AS PER U.I. WL 7001.

**CONCRETE:**

ALL WORK ACCORDANCE WITH ACI-318 LATEST EDITION.

SLABS: 3500 PSI AT 28 DAYS.  
CEMENT: ASTM C-150-85 TYPE I OR TYPE II AGGREGATE ASTM C-38 WASHED GRAVEL OF STONE.  
FINISH: STEEL TROWEL

ALL CONCRETE SHALL MEET ASTM C94-74 "REDI MIXED CONCRETE" ONE COPY OF EACH TRIP TICKET, SHOWING MIX, FIELD WATER, TIME OF DELIVERY WILL BE PROVIDED.

CONCRETE CURING IS TO COMPLY WITH THE REQUIREMENTS OF ACI 318. ALL CONCRETE SHALL BE PLACED AS ESTABLISHED IN THE "RECOMMENDED PRACTICE FOR MEASURING, MIXING AND PLACING CONCRETE", ACI 614-59 AND ACE CODE 301.

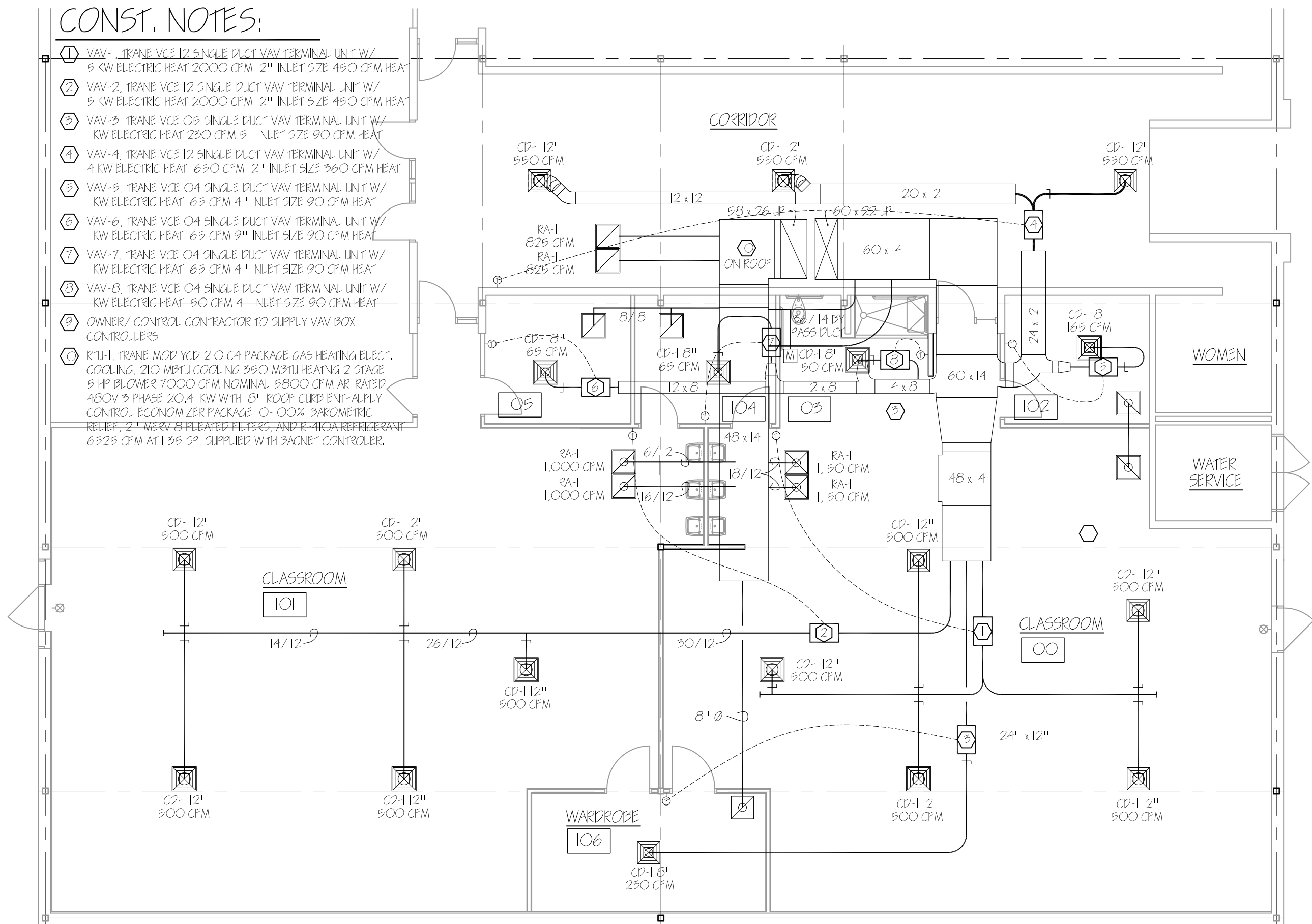


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# CONST. NOTES:

- ① VAV-1, TRANE VCE 12 SINGLE DUCT VAV TERMINAL UNIT W/ 5 KW ELECTRIC HEAT 2000 CFM 12" INLET SIZE 450 CFM HEAT
- ② VAV-2, TRANE VCE 12 SINGLE DUCT VAV TERMINAL UNIT W/ 5 KW ELECTRIC HEAT 2000 CFM 12" INLET SIZE 450 CFM HEAT
- ③ VAV-3, TRANE VCE 05 SINGLE DUCT VAV TERMINAL UNIT W/ 1 KW ELECTRIC HEAT 230 CFM 5" INLET SIZE 90 CFM HEAT
- ④ VAV-4, TRANE VCE 12 SINGLE DUCT VAV TERMINAL UNIT W/ 4 KW ELECTRIC HEAT 1650 CFM 12" INLET SIZE 360 CFM HEAT
- ⑤ VAV-5, TRANE VCE 04 SINGLE DUCT VAV TERMINAL UNIT W/ 1 KW ELECTRIC HEAT 165 CFM 4" INLET SIZE 90 CFM HEAT
- ⑥ VAV-6, TRANE VCE 04 SINGLE DUCT VAV TERMINAL UNIT W/ 1 KW ELECTRIC HEAT 165 CFM 9" INLET SIZE 90 CFM HEAT
- ⑦ VAV-7, TRANE VCE 04 SINGLE DUCT VAV TERMINAL UNIT W/ 1 KW ELECTRIC HEAT 165 CFM 4" INLET SIZE 90 CFM HEAT
- ⑧ VAV-8, TRANE VCE 04 SINGLE DUCT VAV TERMINAL UNIT W/ 1 KW ELECTRIC HEAT 150 CFM 4" INLET SIZE 90 CFM HEAT
- ⑨ OWNER/ CONTROL CONTRACTOR TO SUPPLY VAV BOX CONTROLLERS
- ⑩ RTU-1, TRANE MOD YCD 210 C4 PACKAGE GAS HEATING ELECT. COOLING, 210 MBTU COOLING 350 MBTU HEATING 2 STAGE 5 HP BLOWER 7000 CFM NOMINAL 5800 CFM ARI RATED 480V 3 PHASE 20.41 KW WITH 18" ROOF CURB ENTHAL PLY CONTROL ECONOMIZER PACKAGE, 0-100% BAROMETRIC RELIEF, 2" MERV 8 PLEATED FILTERS, AND R-410A REFRIGERANT 6525 CFM AT 1.35 SP, SUPPLIED WITH BACNET CONTROLLER.



## HVAC PLAN

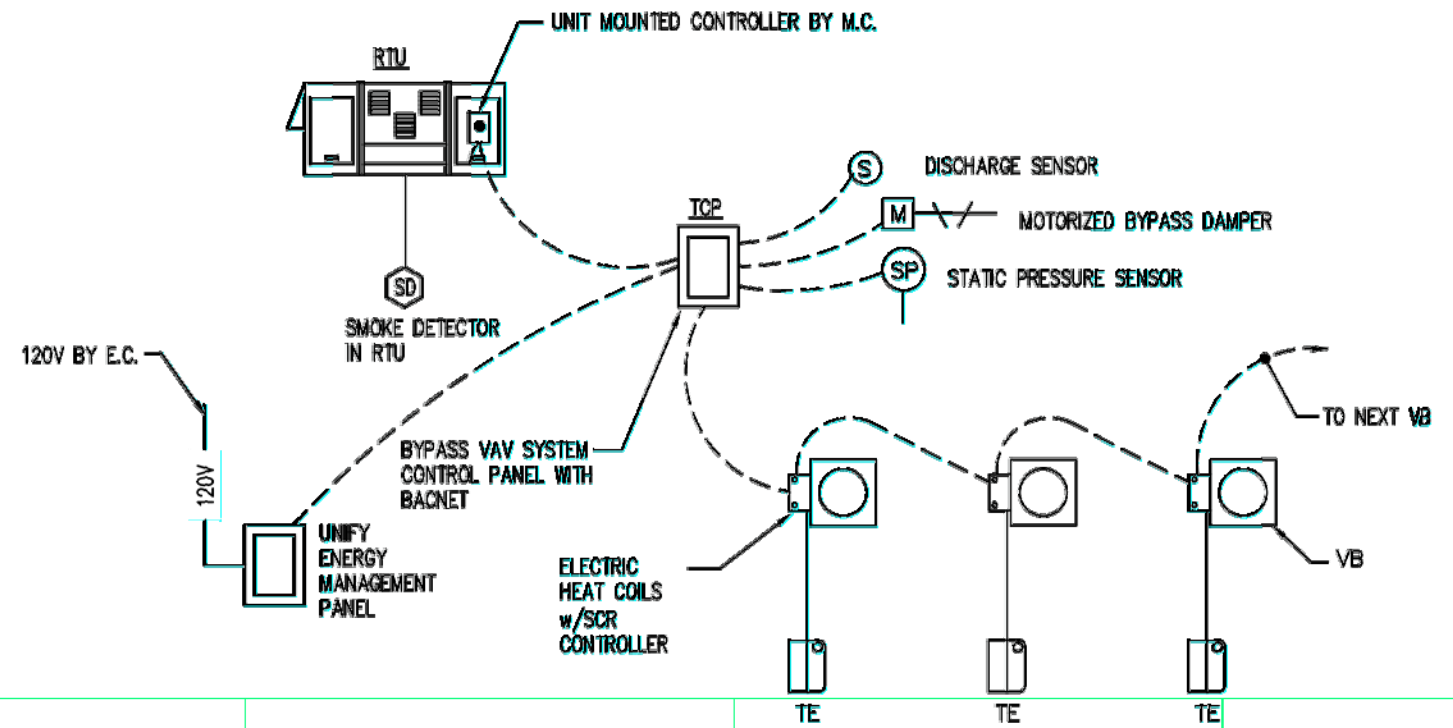
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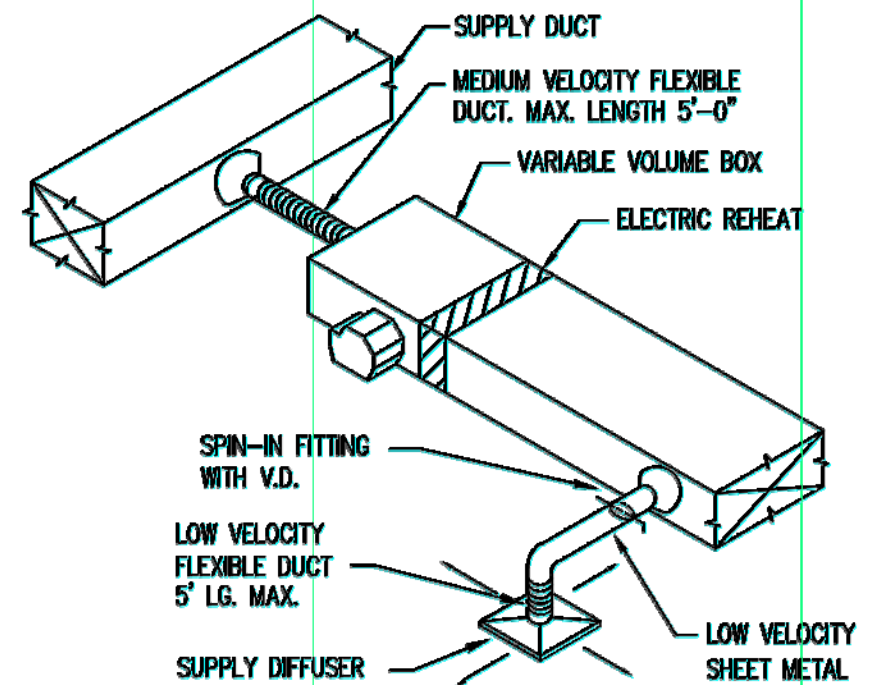
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**TEMPERATURE CONTROL DIAGRAM**

NO SCALE



**TYPICAL DETAIL OF VARIABLE VOLUME BOX**

NO SCALE

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# TEMPERATURE CONTROLS:

## TEMPERATURE CONTROL WIRING

ALL TEMPERATURE CONTROL WIRING SHALL BE THE MECHANICAL TRADES RESPONSIBILITY INCLUDING 120 / 24V TRANSFORMERS. ALL 120V AND LARGER POWER WIRING SHALL BE DONE BY THE ELECTRICAL TRADES.

## ROOFTOP UNIT CONTROLS

PROVIDE RTU WITH A UNIT MOUNTED BACNET MICROPROCESSOR BASED CONTROL SYSTEM. THIS CONTROLLER SHALL PERFORM ALL HEATING, COOLING, VENTILATION AND ECONOMIZER FUNCTIONS IN RESPONSE TO SENSORS MOUNTED IN THE SPACE AND OUTSIDE. ROOM SENSORS TO HAVE NO ADJUSTMENT; SETPOINT IS CONTROLLED AT THE UNIT MOUNTED CONTROLLER.

ECONOMIZER CYCLE: DURING OCCUPIED PERIODS, THE OUTSIDE AIR AND RETURN AIR DAMPERS SHALL BE CONTROLLED ON AN "ECONOMIZER" CYCLE THROUGH THE MIXED AIR SENSOR AND OUTDOOR SENSOR. WHEN THE OUTDOOR AIR TEMPERATURE IS BELLOW 58°F, THE MIXED AIR TEMPERATURE SHALL BE MAINTAINED AT 58°F. WHEN THE OUTDOOR AIR TEMPERATURE IS BETWEEN 58°F AND 70°F, THE OUTSIDE AIR DAMPERS SHALL FULLY OPEN. WHEN THE OUTSIDE AIR TEMPERATURE IS ABOVE 70°F, THE OUTSIDE AIR DAMPER SHALL BE POSITIONED FOR SCHEDULED MINIMUM POSITION. LOW LIMIT SHALL PREVENT DISCHARGE BELOW 55°F.

OCCUPIED CYCLE HEATING AND COOLING: THE SUPPLY FANS RUN CONTINUOUSLY. THE HEATING AND COOLING SHALL BE CONTROLLED BY A REMOTE MOUNTED TEMPERATURE SENSOR. COOLING SHALL BE OFF WHEN OUTDOOR AIR TEMPERATURE IS LESS THAN 60°F.

UNOCCUPIED CYCLE: THE SUPPLY FAN SHALL BE CYCLED ON AND OFF TO MAINTAIN ON AND OFF TO MAINTAIN UNOCCUPIED TEMPERATURE. THE OUTDOOR AIR DAMPER SHALL BE FULLY CLOSED.

SAFETIES: SMOKE DETECTOR SHALL SHUT DOWN WHENEVER SMOKE IS DETECTED AND GENERATE A GENERAL TROUBLE SIGNAL.

OCCUPIED / UNOCCUPIED TIME SCHEDULES THROUGH THE UNIT MOUNTED CONTROLLER AS WELL AS THE SETBACK TEMPERATURES.

## VT SYSTEM

THE CHANGE-OVER / BYPASS VAV SYSTEM SHALL PROVIDE TEMPERATURE CONTROL OF MULTIPLE COMFORT ZONES THROUGH THE USE OF A CONSTANT VOLUME SINGLE-ZONE HVAC UNIT. VARIABLE AIR VOLUME CONTROL SHALL BE PROVIDED FOR EACH ZONE TO MAINTAIN ZONE, TEMPERATURE WITHIN THE HEATING / COOLING SETPOINTS, THE SYSTEM SHALL MONITOR THE TEMPERATURE AND SETPOINTS OF THE ZONES AND AUTOMATICALLY CHANGE THE HEAT / COOL MODE OF THE HVAC UNIT TO SATISFY ZONE REQUIREMENTS. THE SYSTEM SHALL MAINTAIN AIR FLOW THROUGH HVAC UNIT BY BYPASSING AIR FROM THE SUPPLY TO THE RETURN DUCT. BYPASS AIR IS MODULATED BASED UPON SYSTEM MONITORING OF SUPPLY DUCT PRESSURE. VAV BOXES SHALL MODULATE IN THE HEATING AND COOLING MODE. ROOM SENSORS WILL HAVE NO ADJUSTMENT. ELECTRIC HEAT ON VAV BOXES SHALL BE FIRST STAGE OF HEAT AND THE RTU'S GAS HEAT SECOND STAGE.

## TEMPERATURE CONTROL SYSTEM

THE ENTIRE TEMPERATURE CONTROL SYSTEM INCLUDING VAV TERMINAL UNITS, DIRECT DIGITAL CONTROLS, BY-PASS DAMPERS, SENSORS, THERMOSTATS, PROGRAMING, OWNER TRAINING, CHECK TEST AND START UP, ETC. SHALL BE SUPPLIED BY A SINGLE MANUFACTURER WHO SHALL BE RESPONSIBLE FOR THE ENTIRE SYSTEM.

CONTROLS TO BE BACNET.

APPROVED MANUFACTURES: HONEYWELL, TRIDIUM, VYKON, JACE-B025 OR TRANE (VIBRITRACK-TRACKER).

# DUCT CONSTRUCTION NOTES:

- 2" W.G. SMACNA STANDARDS FOR SUPPLY AND RETURN DUCT.
- ALL DUCTWORK SHALL BE GALVANIZED SHEETMETAL INSTALLED PER SMACNA STANDARDS.
- SEAL ALL DUCTWORK SEAMS, JOINTS, ETC. WITH MASTIC DUCT SEALANT CLASS "C".
- FURNISH AND INSTALL FIRE DAMPERS AS NECESSARY TO MEET CODE REQUIREMENTS.
- INSULATE ALL SUPPLY AIR DUCTWORK ABOVE CEILING WITH 1 1/2" FIBERGLASS DUCTWRAP. TAPE ALL JOINTS.
- INSULATE SUPPLY AND RETURN DUCTWORK OUTDOORS OR IN ATTIC WITH 2" FIBERGLASS EXTERIOR INSULATION TO HAVE WEATHER PROOF JACKET.
- DO NOT USE FIBERGLASS DUCT BOARD OR DUCT LINER FOR THIS PROJECT.
- SUPPORT ALL DUCTWORK PER SMACNA STANDARDS.

# DIFFUSER & GRILLE SCHEDULE:

**SAD-1:** SUPPLY AIR DIFFUSER; TITUS OR EQUAL SQUARE CEILING SUPPLY DIFFUSER. STEEL CONSTRUCTION, ADJUSTIBLE HORIZONTAL TO VERTICAL AIRFLOW PATTERN, WHITE POWDER COAT FINISH. FRAME AS REQUIRED TO MATCH GRID SIZE FOR LAY IN CEILING MAXIMUM NECK VELOCITY SHALL BE 500 FPM AND MAXIMUM NC LEVEL SHALL BE 20.

CFM	NECK SIZE
0-125	6x6 (6" DIA.)
126-250	8x8 (8" DIA.)
251-450	12x12 (12" DIA.)
451-600	15x15 (14" DIA.)
601-900	18x18 (16" DIA.)

**RG-1:** RETURN AIR GRILLE; TITUS 50F EGCRATE OR EQUAL, WHITE FINISH. FRAME AS REQUIRED TO MATCH GRID SIZE FOR LAY-IN CEILING. MAXIMUM NECK VELOCITY SHALL BE 500 FPM AND MAXIMUM NC LEVEL SHALL BE 20.

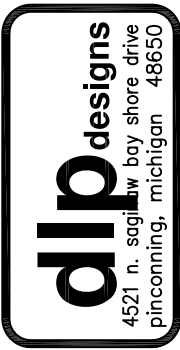
CFM	NECK SIZE	FACE SIZE
0-130	6x6	12x12
131-250	8x8	12x12
251-450	10x10	12x12
451-1000	10x22	12x24
1001-2500	22x22	24x24

# GENERAL NOTES:

- MECHANICAL CONTRACTOR SHALL PROVIDE CERTIFIED INDEPENDENT AIR BALANCE REPORT.
- ALL DUCT TAKE-OFFS / BRANCHES SHALL HAVE MANUAL DAMPERS, FURNISHED AND INSTALLED.
- THERMOSTATS AND REMOTE ZONE SENSORS SHALL BE INSTALLED A MINIMUM OF 4'-0" ABOVE FINISHED FLOOR / COORDINATE EXACT LOCATING WITH OWNER.
- CUTTING AND PATCHING OF ALL WALLS FOR THE INSTALLATION OF SHEET METAL IS BY MECHANICAL TRADES.
- FIRE ALARM SYSTEM IS INSTALLED BY ELECTRICAL CONTRACTOR
- UNIT IS TO SPEAK TO OWNERS EXISTING ENERGY MANAGEMENT SYSTEM.

# VENTILATION REQUIREMENTS:

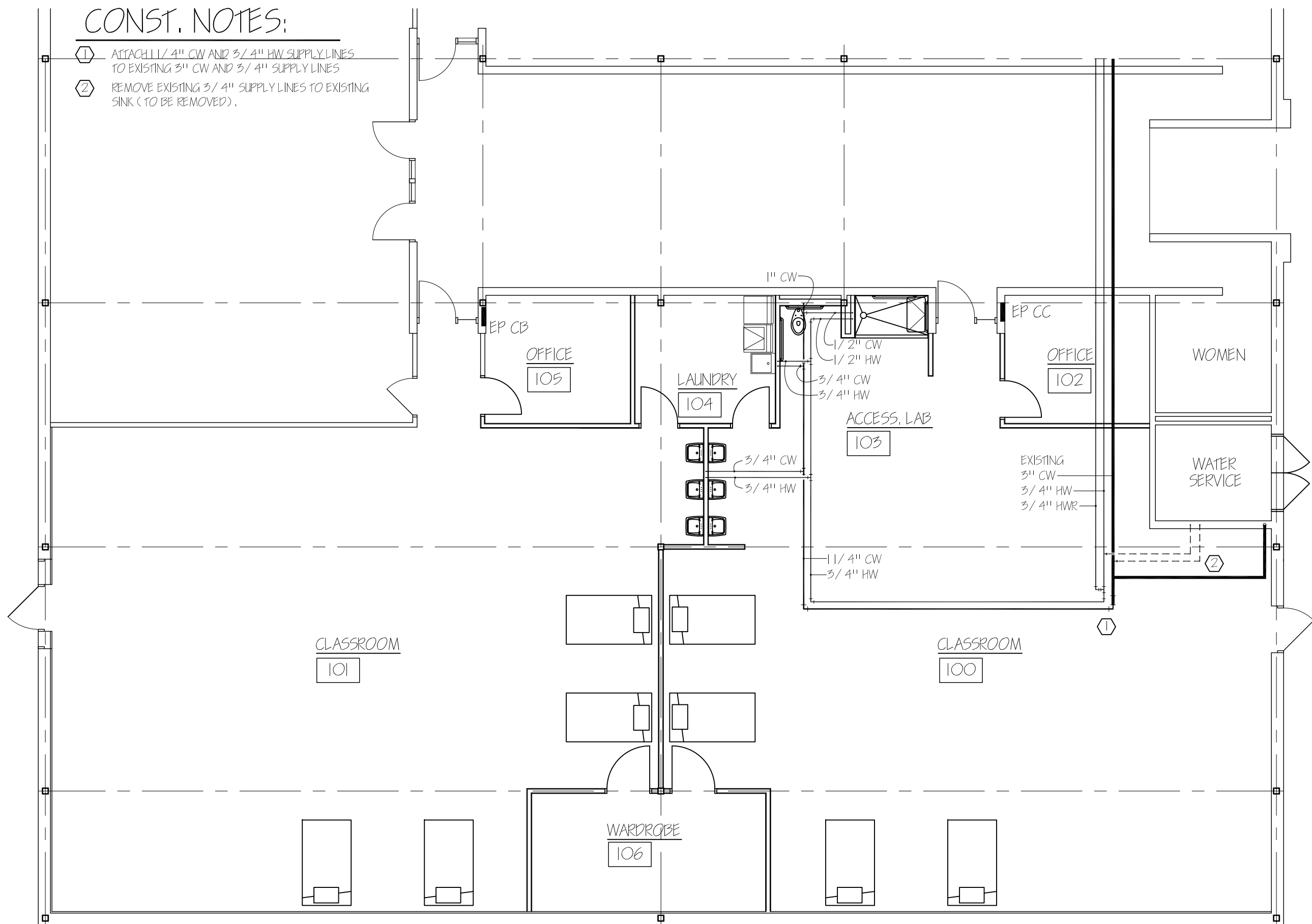
OFFICE AREA: 244 SQ FT @ 5 PERSONS / 1000 SQ FT =  
1 PERSON X 5 CFM = 5 CFM  
244 SQ FT X 0.06 CFM / SQ FT = 15 CFM  
CLASSROOM: 3916 SQ FT @ 35 PERSONS / 1000 SQ FT =  
137 PERSONS X 10 CFM = 1370 CFM  
3916 SQ FT X 0.12 CFM / SQ FT = 470 CFM  
CORRIDOR: 1092 SQ FT X 0.06 CFM / SQ FT = 65 CFM  
TOTAL RTU-1: OUTSIDE AIR 1925 CFM



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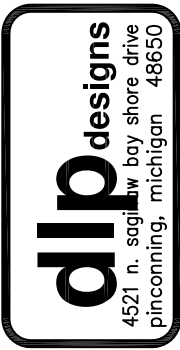
# CONST. NOTES:

- ① ATTACH 1 1/4" CW AND 3/4" HW SUPPLY LINES TO EXISTING 3" CW AND 3/4" SUPPLY LINES
- ② REMOVE EXISTING 3/4" SUPPLY LINES TO EXISTING SINK (TO BE REMOVED).



## PLUMBING PLAN

SCALE: 1/8" = 1'-0"

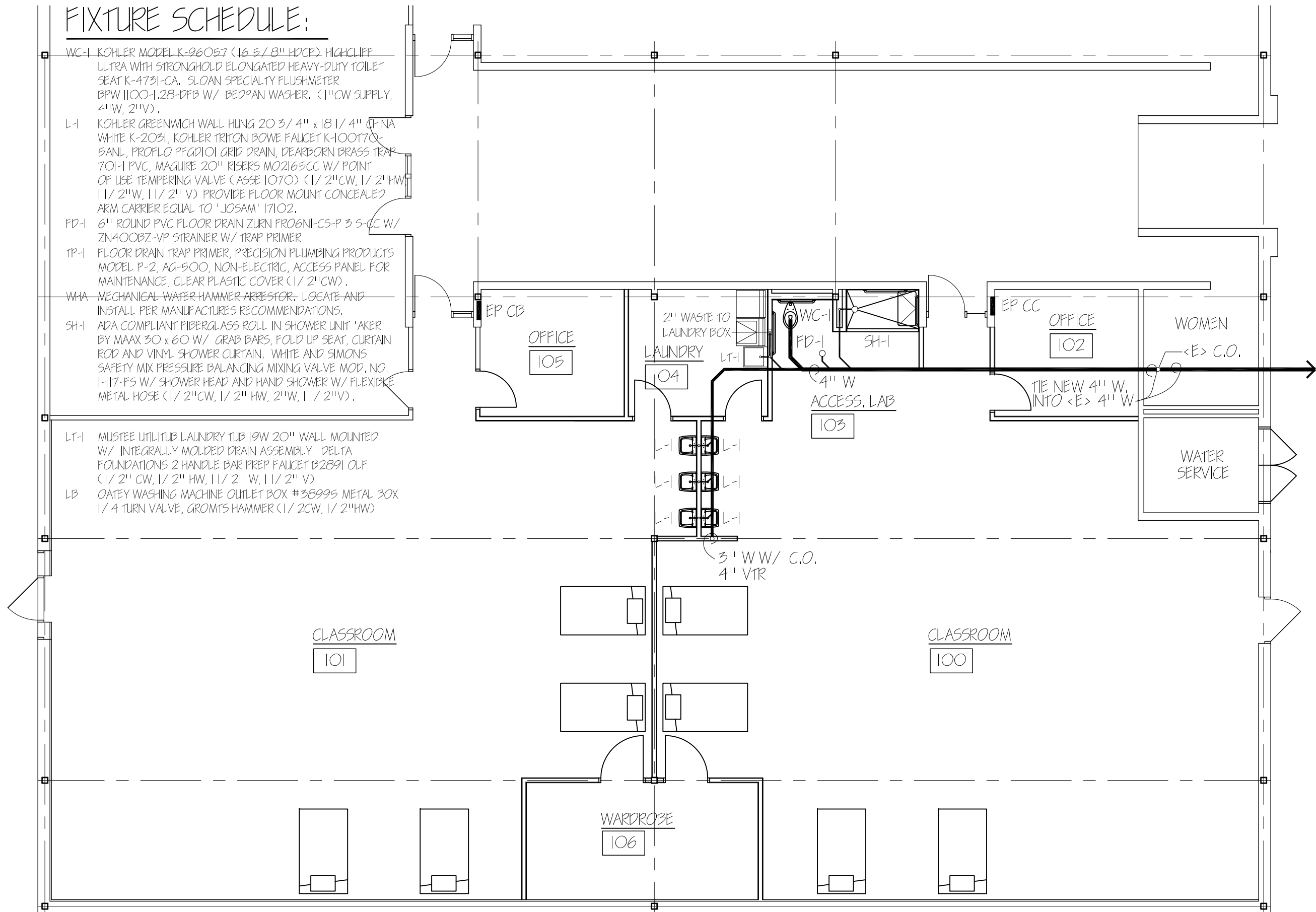


CLASSROOM RENOVATION FOR  
**SAGINAW CAREER COMPLEX**  
 2100 WEISS STREET SAGINAW, MI 48602

project no.	<b>22001</b>
date	18 may 2020
bld documents	
revisions	

# FIXTURE SCHEDULE:

- WC-1 KOHLER MODEL K-96057 (16 5/8" HD CP) HIGHCLIFF ULTRA WITH STRONGHOLD ELONGATED HEAVY-DUTY TOILET SEAT K-4731-CA, SLOAN SPECIALTY FLUSHMETER BPW 1100-1.28-DFB W/ BEDPAN WASHER. (1" CW SUPPLY, 4"W, 2"V).
- L-1 KOHLER GREENWICH WALL HUNG 20 3/4" x 18 1/4" CHINA WHITE K-2031, KOHLER TRITON BOWE FAUCET K-10070-SANL, PROFLO PFGD101 GRID DRAIN, DEARBORN BRASS TRAP 701-1 PVC, MAGUIRE 20" RISERS M02165CC W/ POINT OF USE TEMPERING VALVE (ASSE 1070) (1/2" CW, 1/2" HW, 1 1/2" W, 1 1/2" V) PROVIDE FLOOR MOUNT CONCEALED ARM CARRIER EQUAL TO 'JOSAM' 17102.
- FD-1 6" ROUND PVC FLOOR DRAIN ZURN PRO6NI-CS-P 3 5-CC W/ ZN400BZ-VP STRAINER W/ TRAP PRIMER
- TP-1 FLOOR DRAIN TRAP PRIMER, PRECISION PLUMBING PRODUCTS MODEL P-2, AG-500, NON-ELECTRIC, ACCESS PANEL FOR MAINTENANCE, CLEAR PLASTIC COVER (1/2" CW).
- WHA MECHANICAL WATER HAMMER ARRESTOR. LOCATE AND INSTALL PER MANUFACTURES RECOMMENDATIONS.
- SH-1 ADA COMPLIANT FIBERGLASS ROLL IN SHOWER UNIT 'AKER' BY MAAX 30 x 60 W/ GRAB BARS, FOLD UP SEAT, CURTAIN ROD AND VINYL SHOWER CURTAIN. WHITE AND SIMONS SAFETY MIX PRESSURE BALANCING MIXING VALVE MOD. NO. 1-117-F5 W/ SHOWER HEAD AND HAND SHOWER W/ FLEXIBEKE METAL HOSE (1/2" CW, 1/2" HW, 2"W, 1 1/2" V).
- LT-1 MUSTEE UTILITUB LAUNDRY TUB 19W 20" WALL MOUNTED W/ INTEGRALLY MOLDED DRAIN ASSEMBLY. DELTA FOUNDATIONS 2 HANDLE BAR PREP FAUCET B2891 OLF (1/2" CW, 1/2" HW, 1 1/2" W, 1 1/2" V)
- LB OATEY WASHING MACHINE OUTLET BOX #38995 METAL BOX 1/4 TURN VALVE, GROMTS HAMMER (1/2 CW, 1/2" HW).



## PLUMBING PLAN

SCALE: 1/8" = 1'-0"



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DIVISION 26000 - ELECTRICAL SPECIFICATIONS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUBMITTALS

- A. PRODUCT DATA FOR:
  1. WIRING DEVICES.
  2. LIGHTING FIXTURES AND CONTROLS.
  3. POWER DISTRIBUTION EQUIPMENT.
  4. POWER CONTROL DEVICES FOR HVAC SYSTEMS.

1.3 QUALITY ASSURANCE

- A. ELECTRICAL COMPONENTS, DEVICES, AND ACCESSORIES: LISTED AND LABELED AS DEFINED IN NFPA 70, ARTICLE 100, BY A TESTING AGENCY ACCEPTABLE TO AUTHORITIES HAVING JURISDICTION, AND MARKED FOR INTENDED USE.
- B. COMPLY WITH UL 467 FOR GROUNDING AND BONDING MATERIALS AND EQUIPMENT.
- C. COMPLY WITH NFPA 70.
- D. COMPLY WITH NECA I, INCLUDING THE MOUNTING HEIGHTS LISTED IN THAT STANDARD, UNLESS OTHERWISE NOTED.
- E. COMPLY WITH APPLICABLE PORTIONS OF NECA I, NEMA PB 1.1, AND NEMA PB 2.1 FOR INSTALLATION OF ENCLOSED SWITCHES AND CIRCUIT BREAKERS.
- F. SOURCE LIMITATIONS: OBTAIN EACH TYPE OF PRODUCT, EQUIPMENT, AND WIRING DEVICE AND ASSOCIATED WALL PLATE THROUGH ONE SOURCE FROM A SINGLE MANUFACTURER. INsofar AS THEY ARE AVAILABLE, OBTAIN ALL PRODUCTS, EQUIPMENT, AND WIRING DEVICES AND ASSOCIATED WALL PLATES FROM A SINGLE MANUFACTURER AND ONE SOURCE.

1.4 COORDINATION

- A. COORDINATE ARRANGEMENT, MOUNTING, AND SUPPORT OF ELECTRICAL EQUIPMENT:
  1. TO ALLOW MAXIMUM POSSIBLE HEADROOM UNLESS SPECIFIC MOUNTING HEIGHTS THAT REDUCE HEADROOM ARE INDICATED.
  2. TO PROVIDE FOR EASE OF DISCONNECTING THE EQUIPMENT WITH MINIMUM INTERFERENCE TO OTHER INSTALLATIONS.
  3. TO ALLOW RIGHT OF WAY FOR PIPING AND CONDUIT INSTALLED AT REQUIRED SLOPE. SO CONNECTING RACEWAYS, CABLES, WIREWAYS, CABLE TRAYS, AND BUSWAYS WILL BE CLEAR OF OBSTRUCTIONS AND OF THE WORKING AND ACCESS SPACE OF OTHER EQUIPMENT.
- B. COORDINATE LOCATION OF ACCESS PANELS AND DOORS FOR ELECTRICAL ITEMS THAT ARE BEHIND FINISHED SURFACES OR OTHERWISE CONCEALED. ACCESS DOORS AND PANELS ARE SPECIFIED IN DIVISION 8 SECTION "ACCESS DOORS AND FRAMES."
- C. COORDINATE IDENTIFICATION NAMES, ABBREVIATIONS, COLORS, AND OTHER FEATURES WITH REQUIREMENTS IN THE CONTRACT DOCUMENTS, SHOP DRAWINGS, MANUFACTURER'S WIRING DIAGRAMS, AND THE OPERATION AND MAINTENANCE MANUAL, AND WITH THOSE REQUIRED BY CODES, STANDARDS, AND 29 CFR 1910.145. USE CONSISTENT DESIGNATIONS THROUGHOUT PROJECT. LABEL CIRCUIT NUMBER TO ALL RECEPTACLES.
- D. RECEPTACLES FOR OWNER-FURNISHED EQUIPMENT: MATCH PLUG CONFIGURATIONS.
- E. CORD AND PLUG SETS: MATCH EQUIPMENT REQUIREMENTS.

PART 2 - PRODUCTS

2.1 GROUNDING PRODUCTS

- A. BONDING CONDUCTOR: NO. 4 AWG INSULATED COPPER, STRANDED CONDUCTOR.

2.2 RACEWAYS AND WIREWAYS

- A. RACEWAY MATERIALS:
  1. RIGID STEEL CONDUIT (RMC): ANSI C80.1.
  2. EMT: ANSI C80.3.
  3. LFMC: FLEXIBLE STEEL CONDUIT WITH PVC JACKET.
  4. FITTINGS FOR CONDUIT (INCLUDING ALL TYPES AND FLEXIBLE AND LIQUIDTIGHT), EMT, AND CABLE: NEMA FB 1; LISTED FOR TYPE AND SIZE RACEWAY WITH WHICH USED, AND FOR APPLICATION AND ENVIRONMENT IN WHICH INSTALLED.
  5. RNC: NEMA TC 2, TYPE EPC-40-PVC, NOT ALLOWED UNLESS OTHERWISE INDICATED.
  6. METAL WIREWAYS DESCRIPTION: SHEET METAL SIZED AND SHAPED AS INDICATED, NEMA 250, TYPE I, UNLESS OTHERWISE INDICATED. WIREWAY COVERS: SCREW-COVER TYPE OR AS INDICATED.
  7. SURFACE METAL RACEWAYS: GALVANIZED STEEL WITH SNAP-ON COVERS.
  8. SHEET METAL OUTLET AND DEVICE BOXES: NEMA OS 1.
  9. SMALL SHEET METAL PULL AND JUNCTION BOXES: NEMA OS 1.
  10. HINGED-COVER ENCLOSURES: NEMA 250, TYPE I, WITH CONTINUOUS-HINGE COVER WITH FLUSH LATCH.
  11. METAL ENCLOSURES: STEEL, FINISHED INSIDE AND OUT WITH MANUFACTURER'S STANDARD ENAMEL.

12. CABINETS:

- a. NEMA 250, TYPE I, GALVANIZED-STEEL BOX WITH REMOVABLE INTERIOR PANEL AND REMOVABLE
- b. HINGED DOOR IN FRONT COVER WITH FLUSH LATCH AND CONCEALED HINGE.
- c. KEY LATCH TO MATCH PANELBOARDS.

2.3 CABLES AND WIRING MATERIALS

- A. CONDUCTOR INSULATION: COMPLY WITH NEMA WC 70 FOR TYPES THW, THHN-THWN, XHHW, UF, AND USE.
- B. MULTICONDUCTOR CABLE: COMPLY WITH NEMA WC 70 FOR METAL-CLAD CABLE, TYPE MC WITH GROUND WIRE.
- C. BRANCH CIRCUITS: COPPER. SOLID FOR NO. 10 AWG AND SMALLER; STRANDED FOR NO. 8 AWG AND LARGER.
- D. EXPOSED OR CONCEALED FEEDERS AND BRANCH CIRCUITS: TYPE THHN-THWN, SINGLE CONDUCTORS IN RACEWAY.
- E. CORD DROPS AND PORTABLE APPLIANCE CONNECTIONS: TYPE SO, HARD SERVICE CORD WITH STAINLESS-STEEL, WIRE-MESH, STRAIN RELIEF DEVICE AT TERMINATIONS TO SUIT APPLICATION.
- F. CLASS 1 CONTROL CIRCUITS: TYPE THHN-THWN, IN RACEWAY.
- G. CLASS 2 CONTROL CIRCUITS: TYPE THHN-THWN, IN RACEWAY, OR POWER-LIMITED CABLE, CONCEALED IN BUILDING FINISHES.

2.4 IDENTIFICATION MATERIALS

- A. COLOR-CODING CONDUCTOR TAPE: COLORED, SELF-ADHESIVE VINYL-TAPE NOT LESS THAN 3 MILS THICK BY 1 TO 2 INCHES WIDE.
- B. MARKER TAPES: VINYL OR VINYL-CLOTH, SELF-ADHESIVE WRAPAROUND TYPE, WITH CIRCUIT IDENTIFICATION LEGEND MACHINE PRINTED BY THERMAL TRANSFER OR EQUIVALENT PROCESS.
- C. EQUIPMENT ADHESIVE FILM LABEL: MACHINE PRINTED, IN BLACK, BY THERMAL TRANSFER OR EQUIVALENT PROCESS. MINIMUM LETTER HEIGHT SHALL BE 3/8 INCH.
- D. SELF-ADHESIVE, ENGRAVED, LAMINATED ACRYLIC OR MELAMINE LABEL: ADHESIVE BACKED, WITH WHITE LETTERS ON A DARK-GRAY BACKGROUND. MINIMUM LETTER HEIGHT SHALL BE 3/8 INCH.

2.5 WIRING DEVICES

- A. PROVIDE PRODUCTS BY ONE OF THE FOLLOWING MANUFACTURERS':
  1. COOPER WIRING DEVICES; A DIVISION OF COOPER INDUSTRIES, INC.
  2. HUBBELL INCORPORATED; WIRING DEVICE-KELLEMS
  3. LEVITON MFG. COMPANY INC.
  4. PASS & SEYMOUR/LEGRAND; WIRING DEVICES & ACCESSORIES.
- B. CONVENIENCE RECEPTACLES, 125 V, 20 A: COMPLY WITH NEMA WD 1, NEMA WD 6 CONFIGURATION 5-20R, AND UL 498.
- C. GFCI DUPLEX RECEPTACLES: STRAIGHT BLADE, FEED-THROUGH TYPE. COMPLY WITH NEMA WD 1, NEMA WD 6, UL 498, AND UL 943, CLASS A, AND INCLUDE INDICATOR LIGHT THAT IS LIGHTED WHEN DEVICE IS TRIPPED.
- D. WALL PLATES: SINGLE AND COMBINATION TYPES TO MATCH CORRESPONDING WIRING DEVICES.
  1. PLATE-SECURING SCREWS: METAL WITH HEAD COLOR TO MATCH PLATE FINISH.
  2. MATERIAL: STAINLESS STEEL

2.6 POWER DISTRIBUTION EQUIPMENT

- A. PROVIDE PRODUCTS TO MATCH EXISTING PANELS, SQUARE-D/ GROUP SCHNEIDER COMPANY & GENERAL ELECTRIC CO.; ELECTRICAL DISTRIBUTION & CONTROL DIVISION.
- B. PANELBOARDS:
  1. OVERCURRENT PROTECTIVE DEVICES
    - a. MOLDED-CASE CIRCUIT BREAKER: UL 489, WITH INTERRUPTING CAPACITY TO MEET AVAILABLE FAULT CURRENTS IN STANDARD FRAME SIZES, TRIP RATINGS, AND NUMBER OF POLES.
      - 1) LUGS: COMPRESSION STYLE, SUITABLE FOR NUMBER, SIZE, TRIP RATINGS, AND CONDUCTOR MATERIALS.
      - 2) APPLICATION LISTING: APPROPRIATE FOR APPLICATION; TYPE SWD FOR SWITCHING FLUORESCENT LIGHTING LOADS; TYPE HACR FOR HEATING, AIR-CONDITIONING, AND REFRIGERATING EQUIPMENT.
      - 3) GROUND-FAULT PROTECTION: INTEGRALLY MOUNTED RELAY AND TRIP UNIT WITH ADJUSTABLE PICKUP AND TIME-DELAY SETTINGS, PUSH-TO-TEST FEATURE, AND GROUND-FAULT INDICATOR.
      - 4) MULTIPOLE UNITS ENCLOSED IN A SINGLE HOUSING OR FACTORY-ASSEMBLED TO OPERATE AS A SINGLE UNIT.

PART 3 - EXECUTION

3.1 COMMON REQUIREMENTS FOR ELECTRICAL INSTALLATION

- A. EQUIPMENT: INSTALL TO FACILITATE SERVICE, MAINTENANCE, AND REPAIR OR REPLACEMENT OF COMPONENTS OF BOTH ELECTRICAL EQUIPMENT AND OTHER NEARBY INSTALLATIONS. CONNECT IN SUCH A WAY AS TO FACILITATE FUTURE DISCONNECTING WITH MINIMUM INTERFERENCE WITH OTHER ITEMS IN THE VICINITY.
- B. RIGHT OF WAY: GIVE TO PIPING SYSTEMS INSTALLED AT A REQUIRED SLOPE.

3.2 GROUNDING APPLICATIONS

- A. INSTALL INSULATED EQUIPMENT GROUNDING CONDUCTORS WITH ALL FEEDERS AND BRANCH CIRCUITS. INSULATION SHALL BE RATED AT 600V OR AS APPROVED BY AUTHORITY HAVING JURISDICTION.
- B. CONDUCTORS: INSTALL SOLID CONDUCTOR FOR NO. 10 AWG AND SMALLER, AND STRANDED CONDUCTORS FOR NO. 8 AWG AND LARGER, UNLESS OTHERWISE INDICATED.
- C. CONDUCTOR TERMINATIONS AND CONNECTIONS:
  1. PIPE AND EQUIPMENT GROUNDING CONDUCTOR TERMINATIONS: BOLTED CONNECTORS.
  2. CONNECTIONS TO STRUCTURAL STEEL: EXOTHERMICALLY WELDED CONNECTORS.

3.3 APPLICATION OF IDENTIFICATION SYSTEMS

- A. POWER-CIRCUIT CONDUCTOR IDENTIFICATION: FOR SECONDARY CONDUCTORS NO. 1/0 AWG AND LARGER IN PULL AND JUNCTION BOXES USE COLOR-CODING CONDUCTOR TAPE. IDENTIFY SOURCE AND CIRCUIT NUMBER OF EACH SET OF CONDUCTORS. FOR SINGLE CONDUCTOR CABLES, IDENTIFY PHASE IN ADDITION TO THE ABOVE.
- B. BRANCH-CIRCUIT CONDUCTOR IDENTIFICATION: WHERE THERE ARE CONDUCTORS FOR MORE THAN THREE BRANCH CIRCUITS IN SAME JUNCTION OR PULL BOX, USE COLOR-CODING CONDUCTOR TAPE. IDENTIFY EACH UNGROUNDED CONDUCTOR ACCORDING TO SOURCE AND CIRCUIT NUMBER.
- C. CONDUCTORS TO BE EXTENDED IN THE FUTURE: ATTACH WRITE-ON TAGS TO CONDUCTORS AND LIST SOURCE AND CIRCUIT NUMBER.
- D. EQUIPMENT IDENTIFICATION LABELS: ON EACH UNIT OF EQUIPMENT, INSTALL UNIQUE DESIGNATION LABEL THAT IS CONSISTENT WITH WIRING DIAGRAMS, SCHEDULES, AND OPERATION AND MAINTENANCE MANUAL. APPLY LABELS TO DISCONNECT SWITCHES AND PROTECTION EQUIPMENT, CENTRAL OR MASTER UNITS, CONTROL PANELS, CONTROL STATIONS, TERMINAL CABINETS, AND RACKS OF EACH SYSTEM. SYSTEMS INCLUDE POWER, LIGHTING, CONTROL, COMMUNICATION, SIGNAL, MONITORING, AND ALARM SYSTEMS UNLESS EQUIPMENT IS PROVIDED WITH ITS OWN IDENTIFICATION.

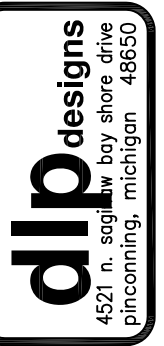
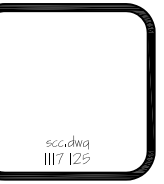
1. LABELING INSTRUCTIONS:

- a. INDOOR EQUIPMENT: ADHESIVE FILM LABEL. UNLESS OTHERWISE INDICATED, PROVIDE A SINGLE LINE OF TEXT WITH 1/2-INCH- HIGH LETTERS ON 1-1/2-INCH-HIGH LABEL; WHERE 2 LINES OF TEXT ARE REQUIRED, USE LABELS 2 INCHES HIGH.

- E. VERIFY IDENTITY OF EACH ITEM BEFORE INSTALLING IDENTIFICATION PRODUCTS.
- F. APPLY IDENTIFICATION DEVICES TO SURFACES THAT REQUIRE FINISH AFTER COMPLETING FINISH WORK.
- G. SELF-ADHESIVE IDENTIFICATION PRODUCTS: CLEAN SURFACES BEFORE APPLICATION, USING MATERIALS AND METHODS RECOMMENDED BY MANUFACTURER OF IDENTIFICATION DEVICE.
- H. SYSTEM IDENTIFICATION COLOR BANDING FOR RACEWAYS AND CABLES: EACH COLOR BAND SHALL COMPLETELY ENIRCLE CABLE OR CONDUIT. PLACE ADJACENT BANDS OF TWO-COLOR MARKINGS IN CONTACT, SIDE BY SIDE. LOCATE BANDS AT CHANGES IN DIRECTION, AT PENETRATIONS OF WALLS AND FLOORS, AT 50-FOOT MAXIMUM INTERVALS IN STRAIGHT RUNS, AND AT 25-FOOT MAXIMUM INTERVALS IN CONGESTED AREAS.
- I. COLOR-CODING FOR PHASE AND VOLTAGE LEVEL IDENTIFICATION, 600 V AND LESS: USE THE COLORS LISTED BELOW FOR UNGROUNDED SERVICE, FEEDER, AND BRANCH-CIRCUIT CONDUCTORS.

1. COLOR SHALL BE FIELD APPLIED FOR CONDUCTORS OVER NO. 10 AWG.

- 2. COLORS FOR 208/120-V CIRCUITS:
  - a. PHASE A: BLACK.
  - b. PHASE B: RED.
  - c. PHASE C: BLUE.
- 3. FIELD-APPLIED, COLOR-CODING CONDUCTOR TAPE: APPLY IN HALF-LAPPED TURNS FOR A MINIMUM DISTANCE OF 6 INCHES FROM TERMINAL POINTS AND IN BOXES WHERE SPLICES OR TAPS ARE MADE. APPLY LAST TWO TURNS OF TAPE WITH NO TENSION TO PREVENT POSSIBLE UNWINDING. LOCATE BANDS TO AVOID OBSCURING FACTORY CABLE MARKINGS.



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PART 3 - EXECUTION

3.4 RACEWAY APPLICATION

- A. COMPLY WITH THE FOLLOWING INDOOR APPLICATIONS, UNLESS OTHERWISE INDICATED:
  - 1. EXPOSED, NOT SUBJECT TO PHYSICAL DAMAGE; EMT.
  - 2. CONCEALED IN CEILINGS AND INTERIOR WALLS AND PARTITIONS; EMT.
  - 3. CONNECTION TO VIBRATING EQUIPMENT (INCLUDING TRANSFORMERS AND HYDRAULIC, PNEUMATIC, ELECTRIC SOLENOID, OR MOTOR-DRIVEN EQUIPMENT): FMC, EXCEPT USE LFMC IN DAMP OR WET LOCATIONS.
  - 4. RACEWAYS FOR OPTICAL FIBER OR COMMUNICATIONS CABLE IN SPACES USED FOR ENVIRONMENTAL AIR: PLENUM-TYPE, COMMUNICATIONS CABLE RACEWAY OR EMT.
- B. MINIMUM RACEWAY SIZE: 3/4-INCH TRADE SIZE.
- C. RACEWAY FITTINGS: COMPATIBLE WITH RACEWAYS AND SUITABLE FOR USE AND LOCATION.
  - 1. RIGID STEEL CONDUIT: USE THREADED RIGID STEEL CONDUIT FITTINGS, UNLESS OTHERWISE INDICATED.
- D. COMPLY WITH NECA I FOR INSTALLATION REQUIREMENTS APPLICABLE TO PRODUCTS SPECIFIED IN PART 2 EXCEPT WHERE REQUIREMENTS ON DRAWINGS OR IN THIS ARTICLE ARE STRICTER.
- E. KEEP RACEWAYS AT LEAST 6 INCHES AWAY FROM PARALLEL RUNS OF FLUES AND STEAM OR HOT-WATER PIPES. INSTALL HORIZONTAL RACEWAY RUNS ABOVE WATER AND STEAM PIPING.
- F. COMPLETE RACEWAY INSTALLATION BEFORE STARTING CONDUCTOR INSTALLATION.
- G. SUPPORT RACEWAYS PER NEC - NFPA-70.
- H. INSTALL NO MORE THAN THE EQUIVALENT OF THREE 90-DEGREE BENDS IN ANY CONDUIT RUN EXCEPT FOR COMMUNICATIONS CONDUITS, FOR WHICH FEWER BENDS ARE ALLOWED.
- I. CONCEAL CONDUIT AND EMT WITHIN FINISHED WALLS, CEILINGS, AND FLOORS, UNLESS OTHERWISE INDICATED.
- J. RACEWAY TERMINATIONS AT LOCATIONS SUBJECT TO MOISTURE OR VIBRATION: USE INSULATING BUSHINGS TO PROTECT CONDUCTORS, INCLUDING CONDUCTORS SMALLER THAN NO. 4 AWG.
- K. INSTALL PULL WIRES IN EMPTY RACEWAYS. USE POLYPROPYLENE OR MONOFILAMENT PLASTIC LINE WITH NOT LESS THAN 200-LB (90-KG) TENSILE STRENGTH. LEAVE AT LEAST 12 INCHES OF SLACK AT EACH END OF PULL WIRE.
- L. FLEXIBLE CONDUIT CONNECTIONS: USE MAXIMUM OF 72 INCHES OF FLEXIBLE CONDUIT FOR RECESSED AND SEMIRECESSED LIGHTING FIXTURES, EQUIPMENT SUBJECT TO VIBRATION, NOISE TRANSMISSION, OR MOVEMENT; AND FOR TRANSFORMERS AND MOTORS.
  - 1. USE LFMC IN DAMP OR WET LOCATIONS SUBJECT TO SEVERE PHYSICAL DAMAGE.
- M. RECESSED BOXES IN MASONRY WALLS: SAW-CUT OPENING FOR BOX IN CENTER OF CELL OF MASONRY BLOCK, AND INSTALL BOX FLUSH WITH SURFACE OF WALL.

3.5 INSTALLATION OF POWER CONDUCTORS AND CABLES

- A. CONCEAL CABLES IN FINISHED WALLS, CEILINGS, AND FLOORS, UNLESS OTHERWISE INDICATED.
- B. USE MANUFACTURER-APPROVED PULLING COMPOUND OR LUBRICANT WHERE NECESSARY; COMPOUND USED MUST NOT DETERIORATE CONDUCTOR OR INSULATION. DO NOT EXCEED MANUFACTURER'S RECOMMENDED MAXIMUM PULLING TENSIONS AND SIDEWALL PRESSURE VALUES.
- C. USE PULLING MEANS, INCLUDING FISH TAPE, CABLE, ROPE, AND BASKET-WEAVE WIRE/ CABLE GRIPS, THAT WILL NOT DAMAGE CABLES OR RACEWAY.
- D. INSTALL EXPOSED CABLES PARALLEL AND PERPENDICULAR TO SURFACES OF EXPOSED STRUCTURAL MEMBERS, AND FOLLOW SURFACE CONTOURS WHERE POSSIBLE.
- E. SUPPORT CABLES ACCORDING TO DIVISION 16 SECTION "ELECTRICAL SUPPORTS AND SEISMIC RESTRAINTS."
- F. IDENTIFY AND COLOR-CODE CONDUCTORS AND CABLES ACCORDING TO DIVISION 16 SECTION "ELECTRICAL IDENTIFICATION."
- G. TIGHTEN ELECTRICAL CONNECTORS AND TERMINALS ACCORDING TO MANUFACTURER'S PUBLISHED TORQUE-TIGHTENING VALUES. IF MANUFACTURER'S TORQUE VALUES ARE NOT INDICATED, USE THOSE SPECIFIED IN UL 486A AND UL 486B.
- H. WIRING AT OUTLETS: INSTALL CONDUCTOR AT EACH OUTLET, WITH AT LEAST 12 INCHES OF SLACK.

3.6 RACEWAY INSTALLATION

- A. COMPLY WITH NECA I FOR INSTALLATION REQUIREMENTS APPLICABLE TO PRODUCTS SPECIFIED IN PART 2 EXCEPT WHERE REQUIREMENTS ON DRAWINGS OR IN THIS ARTICLE ARE STRICTER.
- B. INSTALL PULL WIRES IN EMPTY RACEWAYS. USE POLYPROPYLENE OR MONOFILAMENT PLASTIC LINE WITH NOT LESS THAN 200-LB (90-KG) TENSILE STRENGTH. LEAVE AT LEAST 12 INCHES OF SLACK AT EACH END OF PULL WIRE.

C. RACEWAYS FOR COMMUNICATIONS CABLE: INSTALL RACEWAYS, METALLIC AND RIGID AND FLEXIBLE, AS FOLLOWS:

- 1. ALL COMMUNICATION CONDUITS SHALL BE A MINIMUM OF 1 INCH
  - 2. 3/4-INCH TRADE SIZE AND SMALLER: INSTALL RACEWAYS IN MAXIMUM LENGTHS OF 50 FEET.
  - 3. 1-INCH TRADE SIZE AND LARGER: INSTALL RACEWAYS IN MAXIMUM LENGTHS OF 75 FEET.
  - 4. INSTALL WITH A MAXIMUM OF TWO 90-DEGREE BENDS OR EQUIVALENT FOR EACH LENGTH OF RACEWAY UNLESS DRAWINGS SHOW STRICTER REQUIREMENTS. SEPARATE LENGTHS WITH PULL OR JUNCTION BOXES OR TERMINATIONS AT DISTRIBUTION FRAMES OR CABINETS WHERE NECESSARY TO COMPLY WITH THESE REQUIREMENTS.
- D. FLEXIBLE CONDUIT CONNECTIONS: USE MAXIMUM OF 72 INCHES OF FLEXIBLE CONDUIT FOR RECESSED AND SEMIRECESSED LIGHTING FIXTURES, EQUIPMENT SUBJECT TO VIBRATION, NOISE TRANSMISSION, OR MOVEMENT; AND FOR TRANSFORMERS AND MOTORS.
  - E. RECESSED BOXES IN MASONRY WALLS: SAW-CUT OPENING FOR BOX IN CENTER OF CELL OF MASONRY BLOCK, AND INSTALL BOX FLUSH WITH SURFACE OF WALL.

3.7 WIRING DEVICE INSTALLATION

- A. REPLACE ALL DEVICES THAT HAVE BEEN IN TEMPORARY USE DURING CONSTRUCTION OR THAT SHOW SIGNS THAT THEY WERE INSTALLED BEFORE BUILDING FINISHING OPERATIONS WERE COMPLETE.
- B. KEEP EACH WIRING DEVICE IN ITS PACKAGE OR OTHERWISE PROTECTED UNTIL IT IS TIME TO CONNECT CONDUCTORS.
- C. DO NOT REMOVE SURFACE PROTECTION, SUCH AS PLASTIC FILM AND SMUDGE COVERS, UNTIL THE LAST POSSIBLE MOMENT.
- D. CONNECT DEVICES TO BRANCH CIRCUITS USING PIGTAILS THAT ARE NOT LESS THAN 6 IN LENGTH.
- E. WHEN THERE IS A CHOICE, USE SIDE WIRING WITH BINDING-HEAD SCREW TERMINALS. WRAP SOLID CONDUCTOR TIGHTLY CLOCKWISE, 2/3 TO 3/4 OF THE WAY AROUND TERMINAL SCREW.
- F. USE A TORQUE SCREWDRIVER WHEN A TORQUE IS RECOMMENDED OR REQUIRED BY THE MANUFACTURER.
- G. WHEN CONDUCTORS LARGER THAN NO. 12 AWG ARE INSTALLED ON 15- OR 20-A CIRCUITS, SPLICE NO. 12 AWG PIGTAILS FOR DEVICE CONNECTIONS.
- H. TIGHTEN UNUSED TERMINAL SCREWS ON THE DEVICE.
- I. WHEN MOUNTING INTO METAL BOXES, REMOVE THE FIBER OR PLASTIC WASHERS USED TO HOLD DEVICE MOUNTING SCREWS IN YOKES, ALLOWING METAL-TO-METAL CONTACT.
- J. RECEPTACLE ORIENTATION:
  - 1. INSTALL GROUND PIN OF VERTICALLY MOUNTED RECEPTACLES UP, AND ON HORIZONTALLY MOUNTED RECEPTACLES TO THE RIGHT.
- K. DEVICE PLATES: DO NOT USE OVERSIZED OR EXTRA-DEEP PLATES. REPAIR WALL FINISHES AND REMOUNT OUTLET BOXES WHEN STANDARD DEVICE PLATES DO NOT FIT FLUSH OR DO NOT COVER ROUGH WALL OPENING.
- L. ARRANGEMENT OF DEVICES: UNLESS OTHERWISE INDICATED, MOUNT FLUSH, WITH LONG DIMENSION VERTICAL AND WITH GROUNDING TERMINAL OF RECEPTACLES ON TOP. GROUP ADJACENT SWITCHES UNDER SINGLE, MULTIGANG WALL PLATES.

3.8 FIRE ALARM SYSTEM

- A. SIMPLEX 4010 EXISTING SYSTEM.
- B. MATCH INSTALLATION OF CABLING THROUGHOUT THE SPACE.
- C. REUSE EXISTING DEVICES IN NEW SPACE.
- D. CONTACT SIMPLEX FOR CERTIFIED DRAWINGS AND SUBMITTALS TO BE SUBMITTED TO THE STATE OF MICHIGAN.
- E. CLIFF GRIFFIN; SALESMAN 248426-6655

3.9 PANELBOARD INSTALLATION

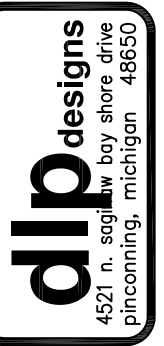
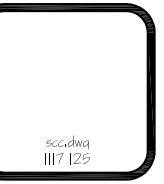
- A. INSTALL FILLER PLATES IN UNUSED SPACES.
- B. ARRANGE CONDUCTORS IN GUTTERS INTO GROUPS AND BUNDLE AND WRAP WITH WIRE TIES AFTER COMPLETING LOAD BALANCING.

3.10 FIELD QUALITY CONTROL

- A. PREPARE FOR ACCEPTANCE TESTS AS FOLLOWS:
  - 1. TEST INSULATION RESISTANCE FOR EACH PANELBOARD BUS, COMPONENT, CONNECTING SUPPLY, FEEDER, AND CONTROL CIRCUIT.
  - 2. TEST CONTINUITY OF EACH CIRCUIT.
- B. PERFORM THE FOLLOWING FIELD TESTS AND INSPECTIONS AND PREPARE TEST REPORTS:
  - 1. PERFORM EACH ELECTRICAL TEST AND VISUAL AND MECHANICAL INSPECTION STATED IN NETATS, SECTION 7.5 FOR SWITCHES AND SECTION 7.6 FOR MOLDED-CASE CIRCUIT BREAKERS. CERTIFY COMPLIANCE WITH TEST PARAMETERS.
  - 2. CORRECT MALFUNCTIONING UNITS ON-SITE, WHERE POSSIBLE, AND RETEST TO DEMONSTRATE COMPLIANCE; OTHERWISE, REPLACE WITH NEW UNITS AND RETEST.

# ELECTRICAL DEMO NOTES

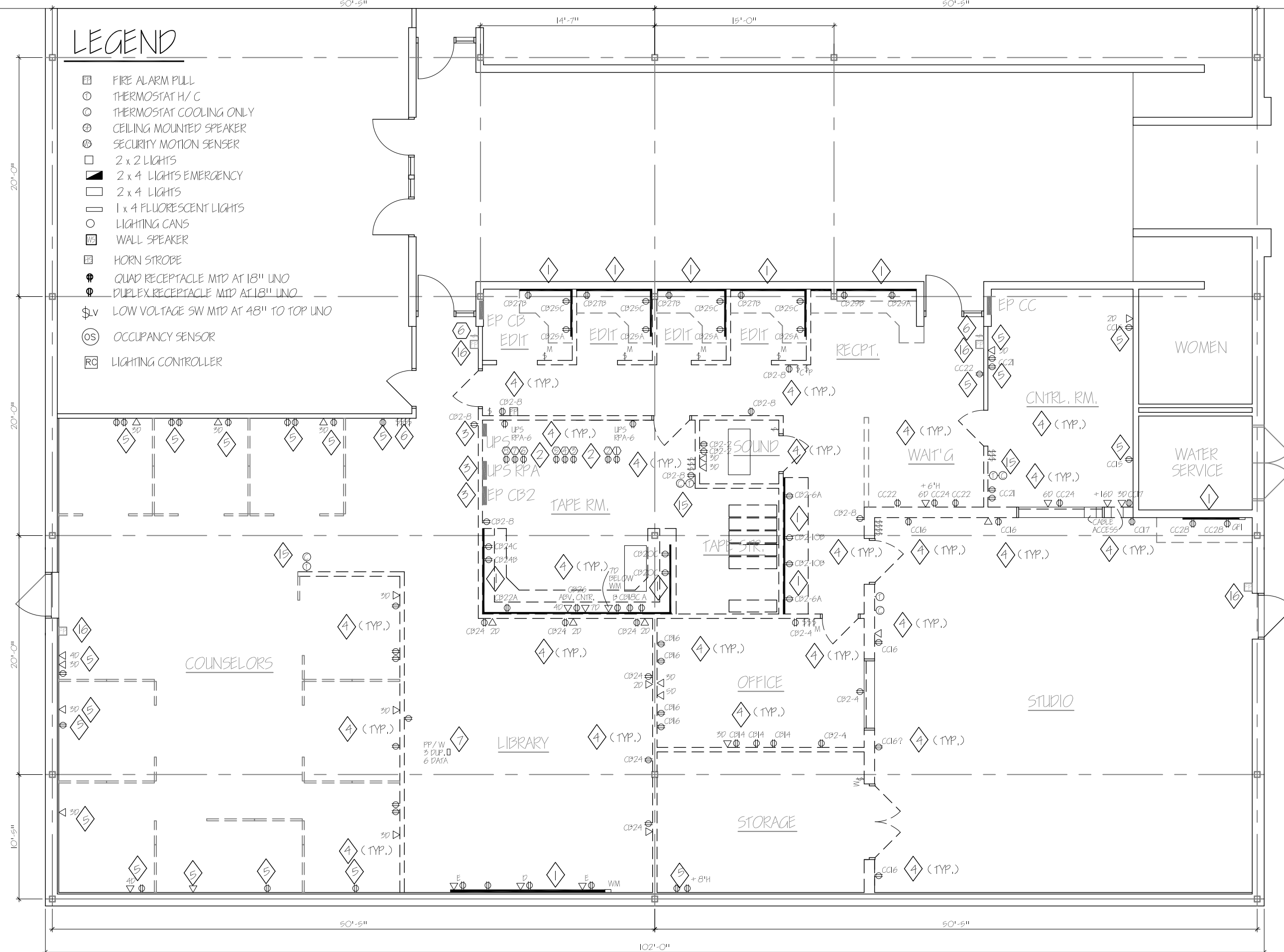
- 1 REMOVE EXISTING WM 4000 AND ASSOCIATED POWER, DATA, CONDUIT AND WIRE TO ORIGINAL LOCATION.
- 2 REMOVE EXISTING POWER AND DATA FROM CEILING WITH ASSOCIATED CONDUIT AND WIRE TO ORIGINAL LOCATION.
- 3 REMOVE EXISTING PANELS WITH ALL ASSOCIATED CONDUIT AND WIRE. RECIRCUIT ANY CIRCUITS NOT ACCOUNTED FOR.
- 4 REMOVE EXISTING POWER & DATA FROM GYPSUM BOARD WALLS THAT BEING DEMOLISHED, WITH ASSOCIATED CONDUIT & WIRE TO ORIGINAL LOCATION.
- 5 EXISTING DEVICE TO REMAIN RECIRCUIT AS REQUIRED AND ACCOUNT FOR IN THE PANELS.
- 6 DISCONNECT AND REMOVE DEVICE WITH ALL ASSOCIATED CONDUIT AND WIRE TO ORIGINAL POINT. IF DEVICE IS IN AN EXISTING TO REMAIN WALL THEN PROVIDE A BLANK COVER UNLESS NOTED OTHERWISE.
- 7 DISCONNECT AND REMOVE POWER POLE WITH ASSOCIATED CONDUIT AND WIRE TO SOURCE.
- 8 DISCONNECT AND REMOVE EXIT SIGN FROM CEILING, RELOCATE TO NEW CEILING AS SHOWN ON LIGHTING PLAN.
- 9 DISCONNECT AND RELOCATE EXISTING FIRE ALARM HORN STROBE FROM CEILING OR WALL WITH ASSOCIATED CONDUIT AND WIRE TO SOURCE AND RELOCATE TO NEW LOCATIONS.
- 10 DISCONNECT, REMOVE AND SALVAGE CEILING SPEAKERS WITH ASSOCIATED CONDUIT AND WIRE. SPEAKERS TO BE PROTECTED AND HANDED OVER TO THE OWNER.
- 11 DISCONNECT AND REMOVE MOTION SENSORS AND ALL ASSOCIATED CONDUIT, WIRE AND CONTROLLER TO SOURCE, SALVAGE TO THE OWNER.
- 12 DISCONNECT AND REMOVE BUSS DUCT WITH ALL ASSOCIATED CONDUIT AND WIRE TO SOURCE. OWNER HAS THE RIGHT TO SALVAGE OTHERWISE CONTRACTOR TO DISPOSE OF PROPERLY.
- 13 TYPICAL; DISCONNECT AND REMOVE EXISTING CEILING LIGHTING WITH ASSOCIATED CONDUIT AND WIRE TO SOURCE, REUSE EXISTING CIRCUITING FOR NEW LAYOUT. OWNER HAS THE RIGHT TO SALVAGE ALL FIXTURES OTHERWISE CONTRACTOR TO DISPOSE OF UNITS. REMOVE LIGHTS FROM THE RELAY SYSTEM, REUSE EXISTING CIRCUITS.
- 14 EXISTING FIRE ALARM TO REMAIN, PROTECT DURING CONSTRUCTION AND CLEAN AT THE END OF CONSTRUCTION. VERIFY WITH FIRE ALARM CONTRACTOR OPERATION.
- 15 DISCONNECT AND REMOVE ALL ELECTRICAL FOR THE AC UNITS IN THE ROOM AND ON THE ROOF. VERIFY IN FIELD.
- 16 EXISTING FIRE ALARM DEVICE TO REMAIN, PROTECT DURING CONSTRUCTION AND CLEAN AFTER CONSTRUCTION, VERIFY UNIT WORKS. SIMPLEX 4010 SYSTEM. CONTACT SIMPLEX GRINNEL FOR ALL ADDS AND CHANGES AND REPROGRAMMING.



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# LEGEND

- ☐ FIRE ALARM PULL
- ⊙ THERMOSTAT H/ C
- ⊙ THERMOSTAT COOLING ONLY
- ⊕ CEILING MOUNTED SPEAKER
- ⊕ SECURITY MOTION SENSER
- 2 x 2 LIGHTS
- ▣ 2 x 4 LIGHTS EMERGENCY
- 2 x 4 LIGHTS
- ▭ 1 x 4 FLUORESCENT LIGHTS
- LIGHTING CANS
- ⊕ WALL SPEAKER
- ⊕ HORN STROBE
- ⊕ QUAD RECEPTACLE MTD AT 18" UNO
- ⊕ DUPLEX RECEPTACLE MTD AT 18" UNO
- ⊕ LOW VOLTAGE SW MTD AT 48" TO TOP UNO
- ⊕ OCCUPANCY SENSOR
- ⊕ LIGHTING CONTROLLER



## POWER DEMOLITION PLAN

SCALE: 1/8" = 1'-0"

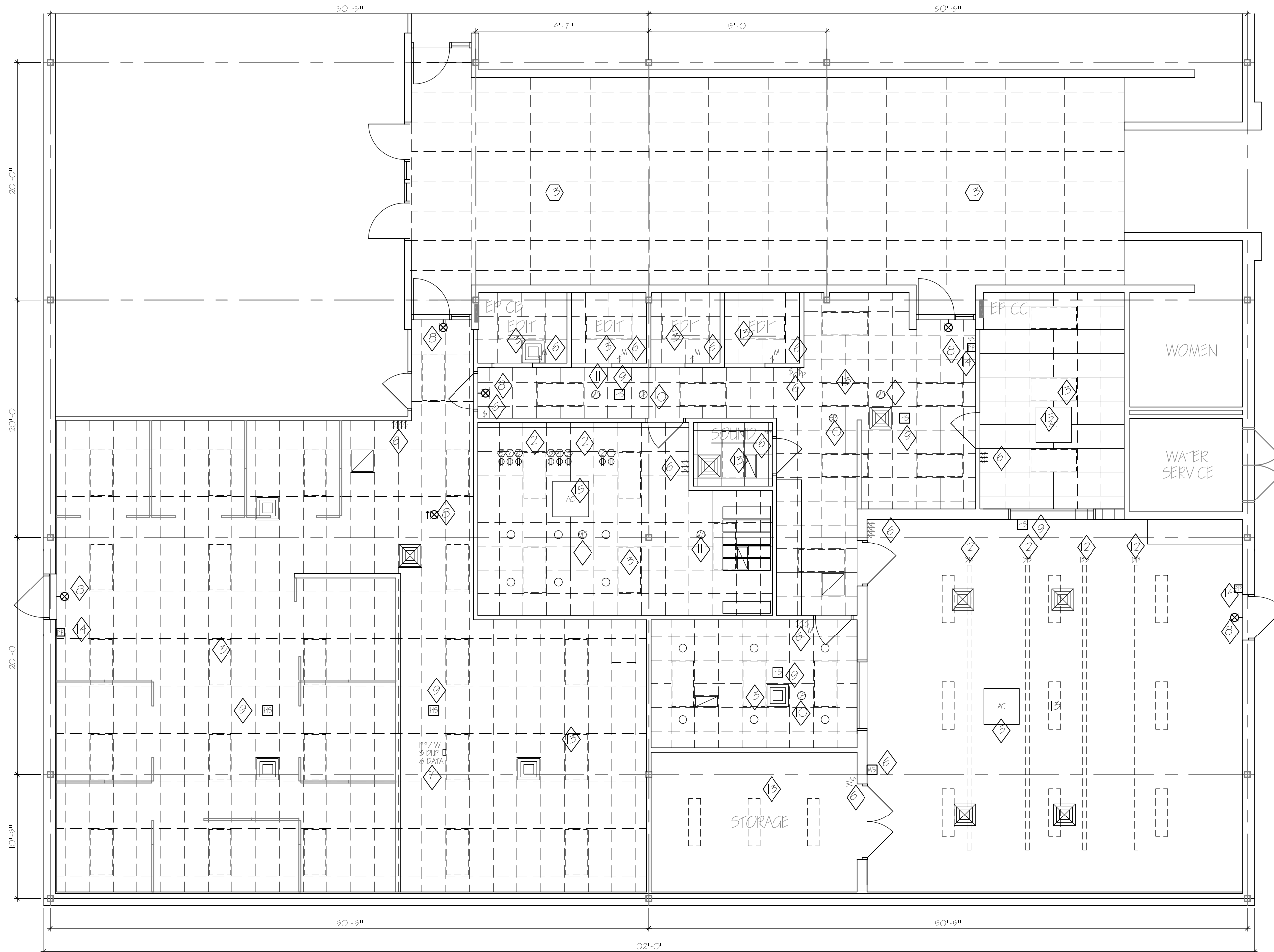
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**dip designs**  
4521 n. saginaw bay shore drive  
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CLASSROOM RENOVATION FOR  
**SAGINAW CAREER COMPLEX**  
2100 WEISS STREET SAGINAW, MI 48602

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# LIGHTING DEMOLITION PLAN

SCALE: 1/8" = 1'-0"

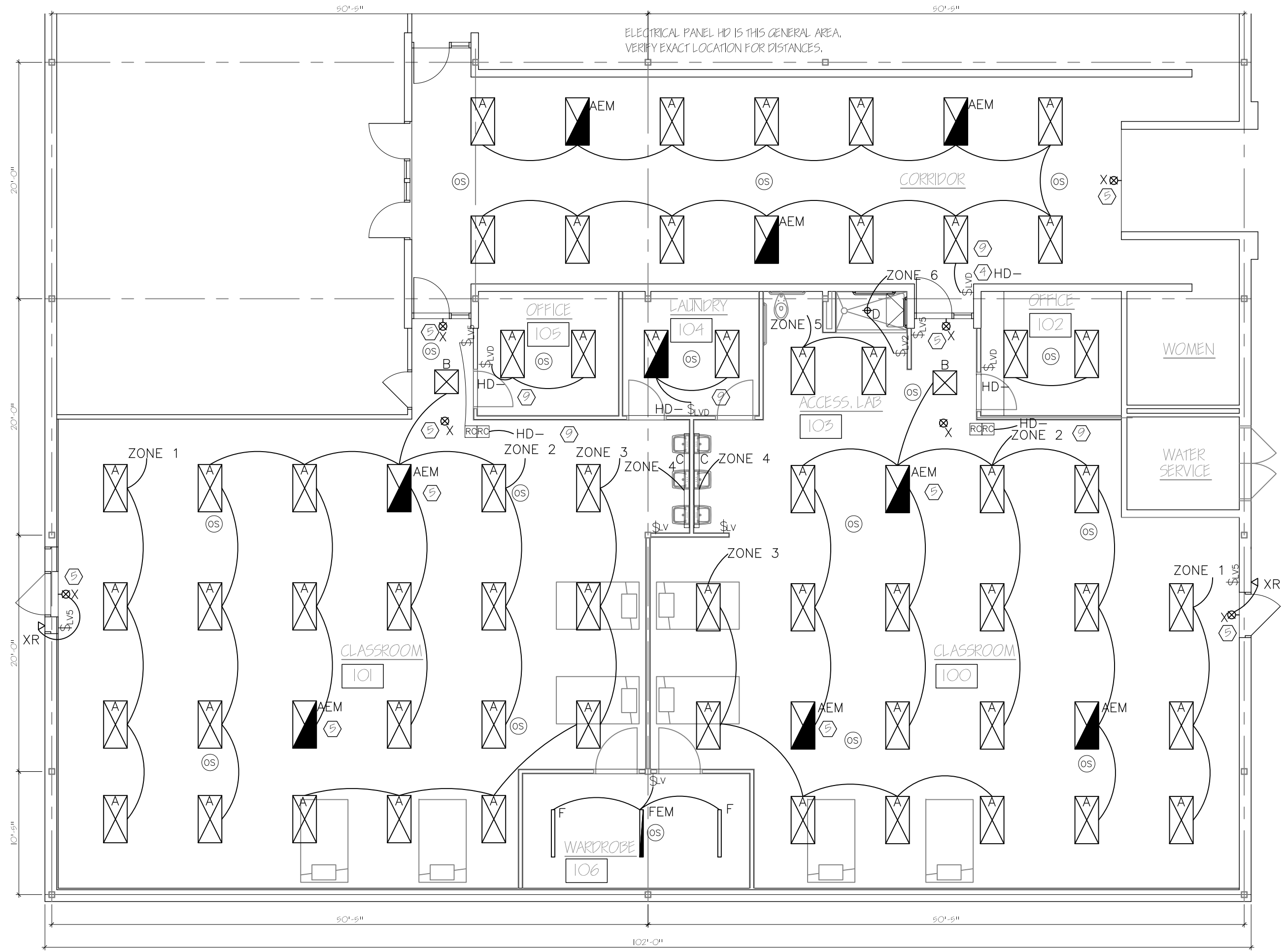
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# LIGHTING PLAN

SCALE: 1/8" = 1'-0"

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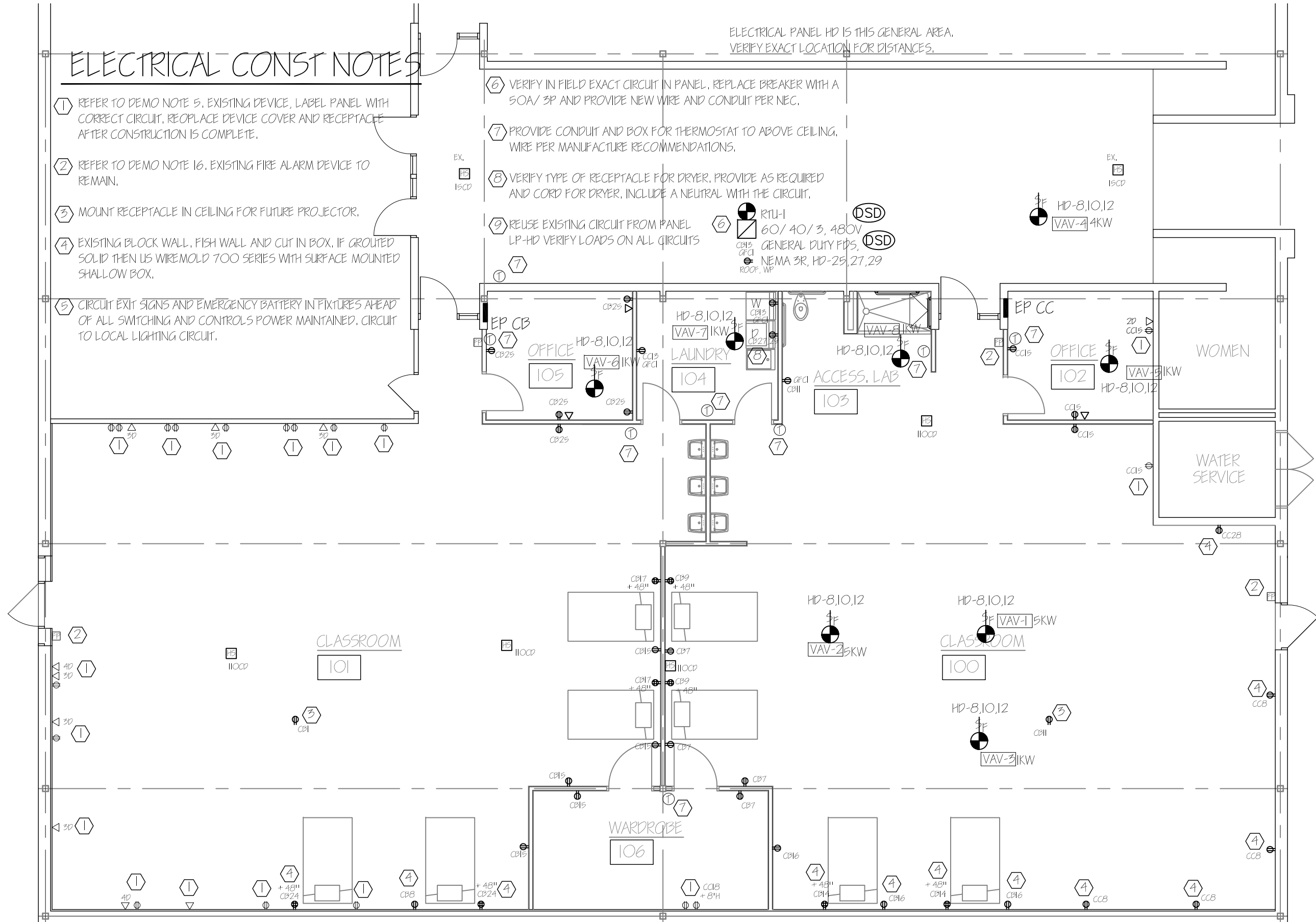
# ELECTRICAL CONST NOTES

- 1 REFER TO DEMO NOTE 5. EXISTING DEVICE, LABEL PANEL WITH CORRECT CIRCUIT. REPLACE DEVICE COVER AND RECEPTACLE AFTER CONSTRUCTION IS COMPLETE.
- 2 REFER TO DEMO NOTE 16. EXISTING FIRE ALARM DEVICE TO REMAIN.
- 3 MOUNT RECEPTACLE IN CEILING FOR FUTURE PROJECTOR.
- 4 EXISTING BLOCK WALL, FISH WALL AND CUT IN BOX. IF GROUTED SOLID THEN US WIREMOLD 700 SERIES WITH SURFACE MOUNTED SHALLOW BOX.
- 5 CIRCUIT EXIT SIGNS AND EMERGENCY BATTERY IN FIXTURES AHEAD OF ALL SWITCHING AND CONTROLS POWER MAINTAINED. CIRCUIT TO LOCAL LIGHTING CIRCUIT.

ELECTRICAL PANEL HD IS THIS GENERAL AREA. VERIFY EXACT LOCATION FOR DISTANCES.

- 6 VERIFY IN FIELD EXACT CIRCUIT IN PANEL. REPLACE BREAKER WITH A 50A/ 3P AND PROVIDE NEW WIRE AND CONDUIT PER NEC.
- 7 PROVIDE CONDUIT AND BOX FOR THERMOSTAT TO ABOVE CEILING. WIRE PER MANUFACTURE RECOMMENDATIONS.
- 8 VERIFY TYPE OF RECEPTACLE FOR DRYER. PROVIDE AS REQUIRED AND CORD FOR DRYER. INCLUDE A NEUTRAL WITH THE CIRCUIT.
- 9 REUSE EXISTING CIRCUIT FROM PANEL LP-HD VERIFY LOADS ON ALL CIRCUITS

RTU-1  
60/40/3, 480V  
GENERAL DUTY FDS, (DSD)  
NEMA 3R, HD-25,27,29  
ROOF, WP



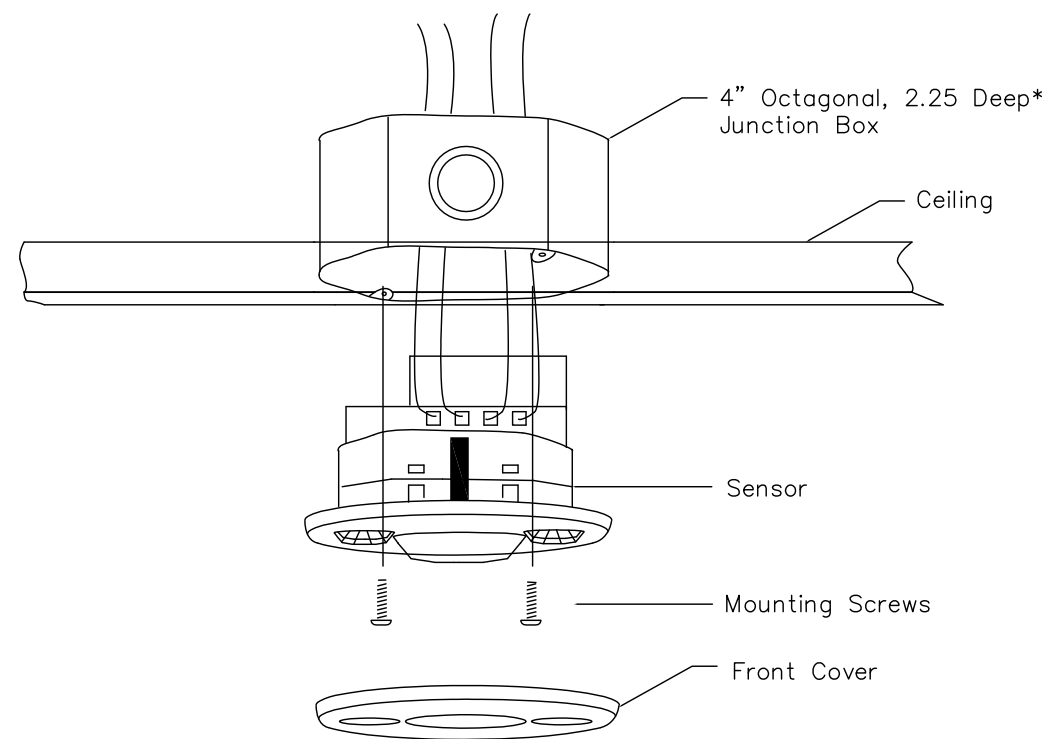
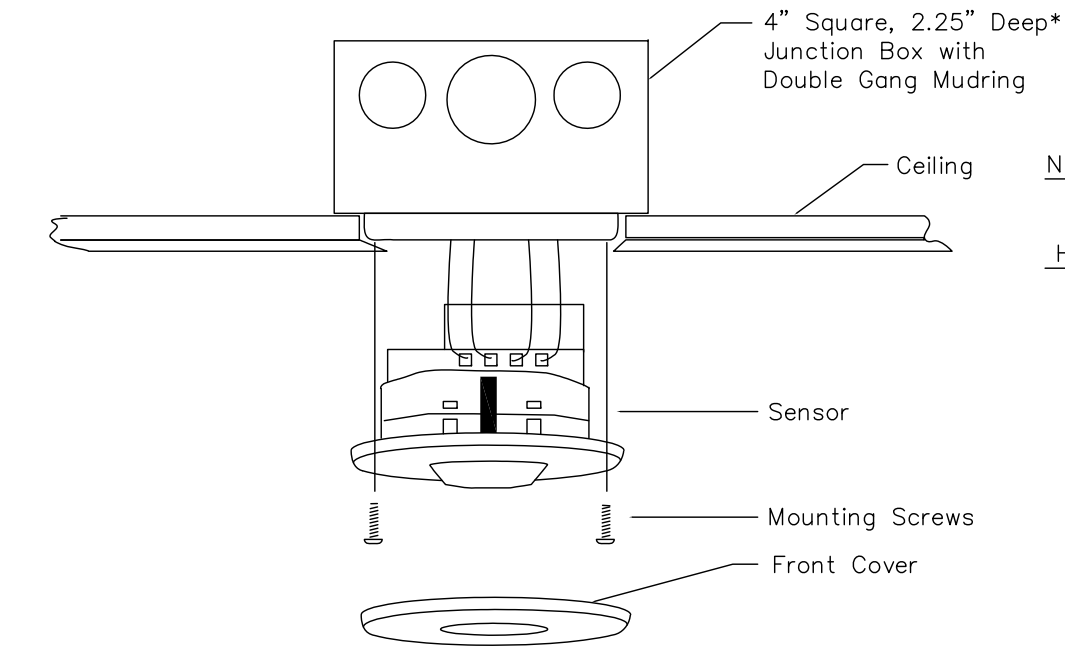
# POWER PLAN

SCALE: 1/8" = 1'-0"

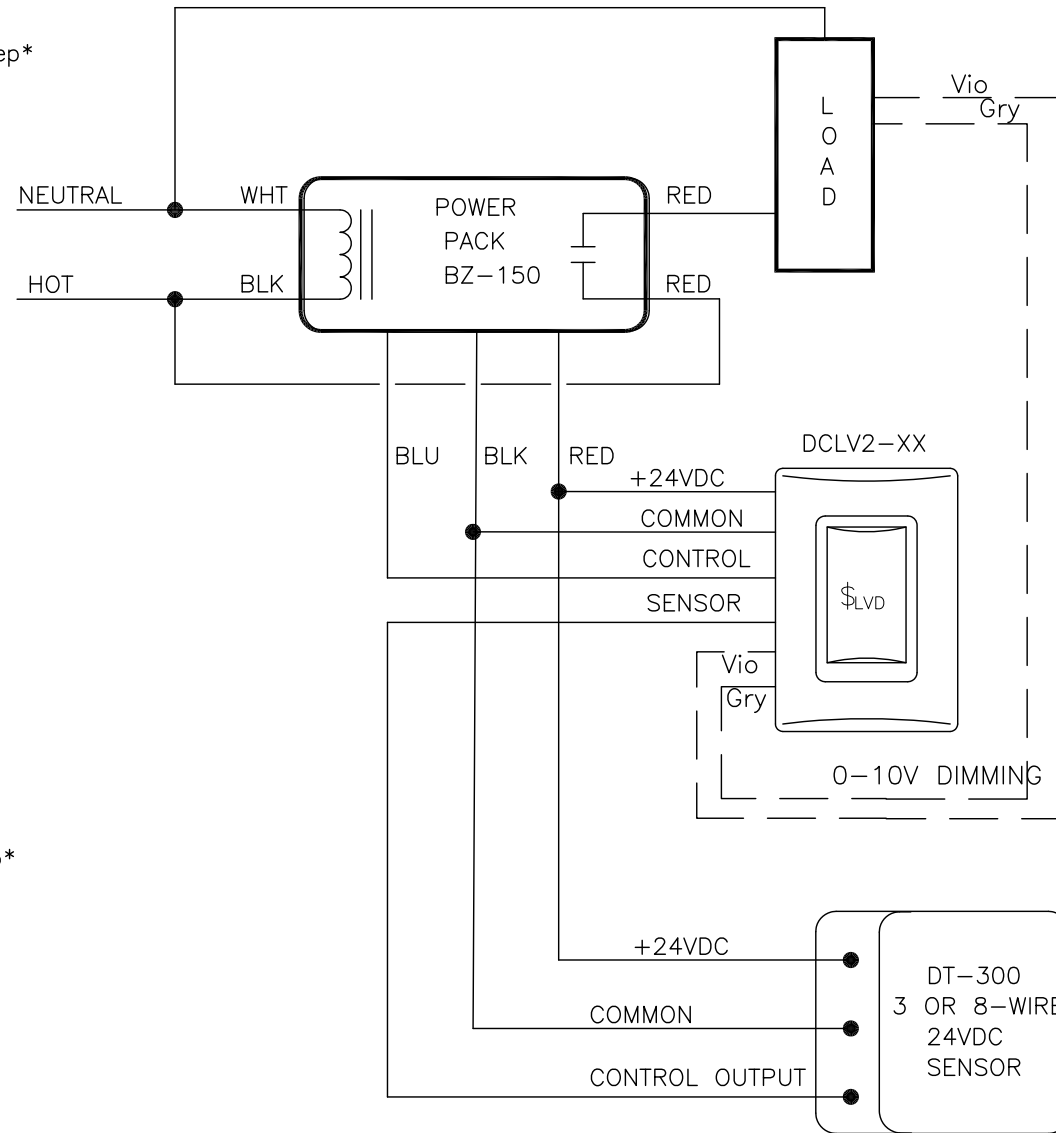


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XX  
E? NO SCALE  
**CEILING MOUNTED OCC. SENSOR DETAIL**



XX  
E? NO SCALE  
**102, 104, 105 OFFICE DETAIL**

**INSTALLATION NOTES**

- A. ALL COMPONENTS ARE WATTSTOPPER SERIES. UNLESS NOTED OTHERWISE
- B. INSTALL THE ROOM POWER PACK(S) ON A 4"X4" BOX(S).
- C. LOCATE ALL CONNECTIONS AND OUTPUT RELAY MODULE ABOVE THE DOOR IN THE SPECIFIED ROOM.
- D. LOCATE OCCUPANCY SENSOR TO GIVE THE BEST COVERAGE, CONTRACTOR SHALL SUPPLY ENOUGH CABLE TO MOVE THE SENSOR AROUND.
- E. INSTALL DCLV2 SWITCH IN EACH ROOM
- N. NO WALL SENSORS.

**PROGRAMING NOTES**

- A. AUTO ON - ALL TO 50%.
- B. AUTO OFF - ALL OFF VIA OCCUPANCY SENSOR AFTER 15 MIN. OF NO MOTION
- C. PRESS SWITCH TWICE 100% ON -100% LIGHTS ON
- D. PRESS SWITCH ONCE - LAST NON-ZERO LEVEL
- E. PRESS & HOLD - TO RAISE LIGHT LEVEL
- F. PRESS & HOLD - TO LOWER LIGHT LEVEL
- G. PRESS ONCE - LIGHTS FADE OFF

**REFER TO SUBSEQUENT DETAILS  
INSTALLATION NOTES**

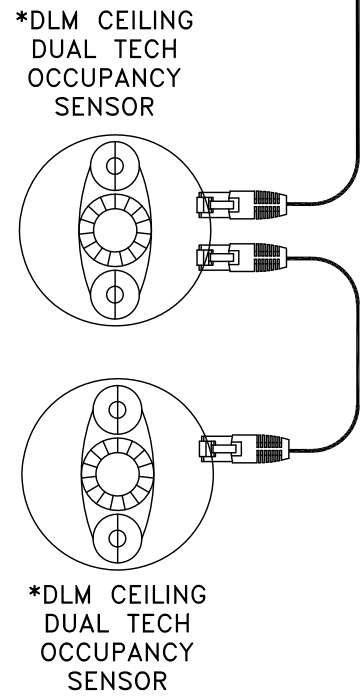
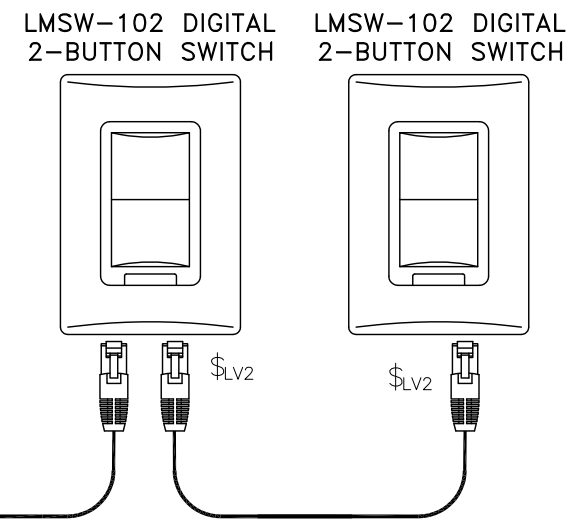
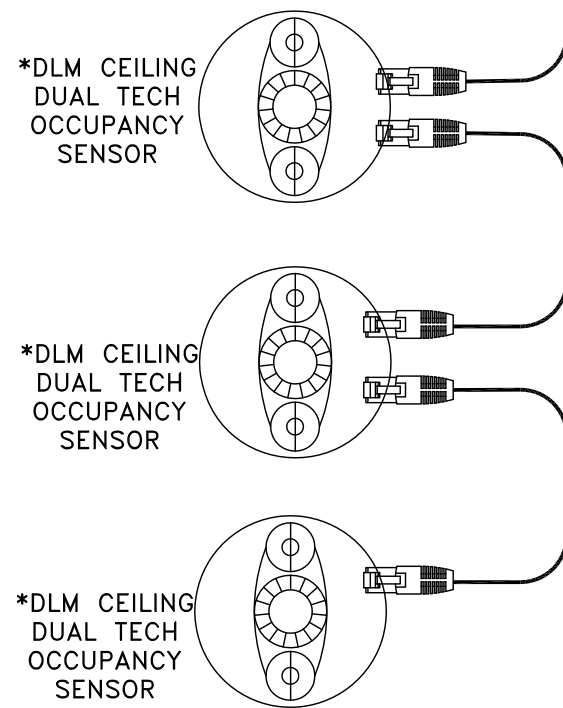
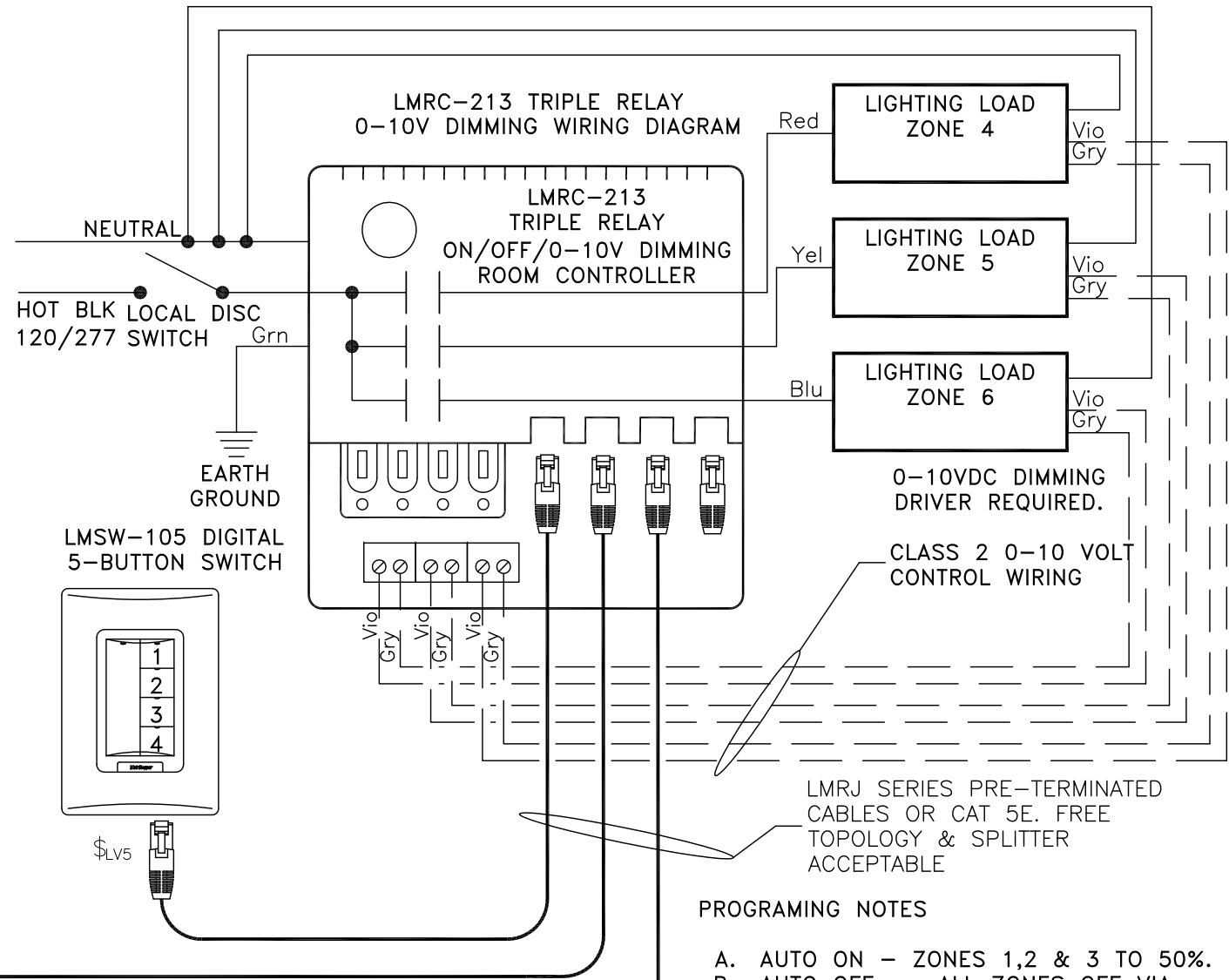
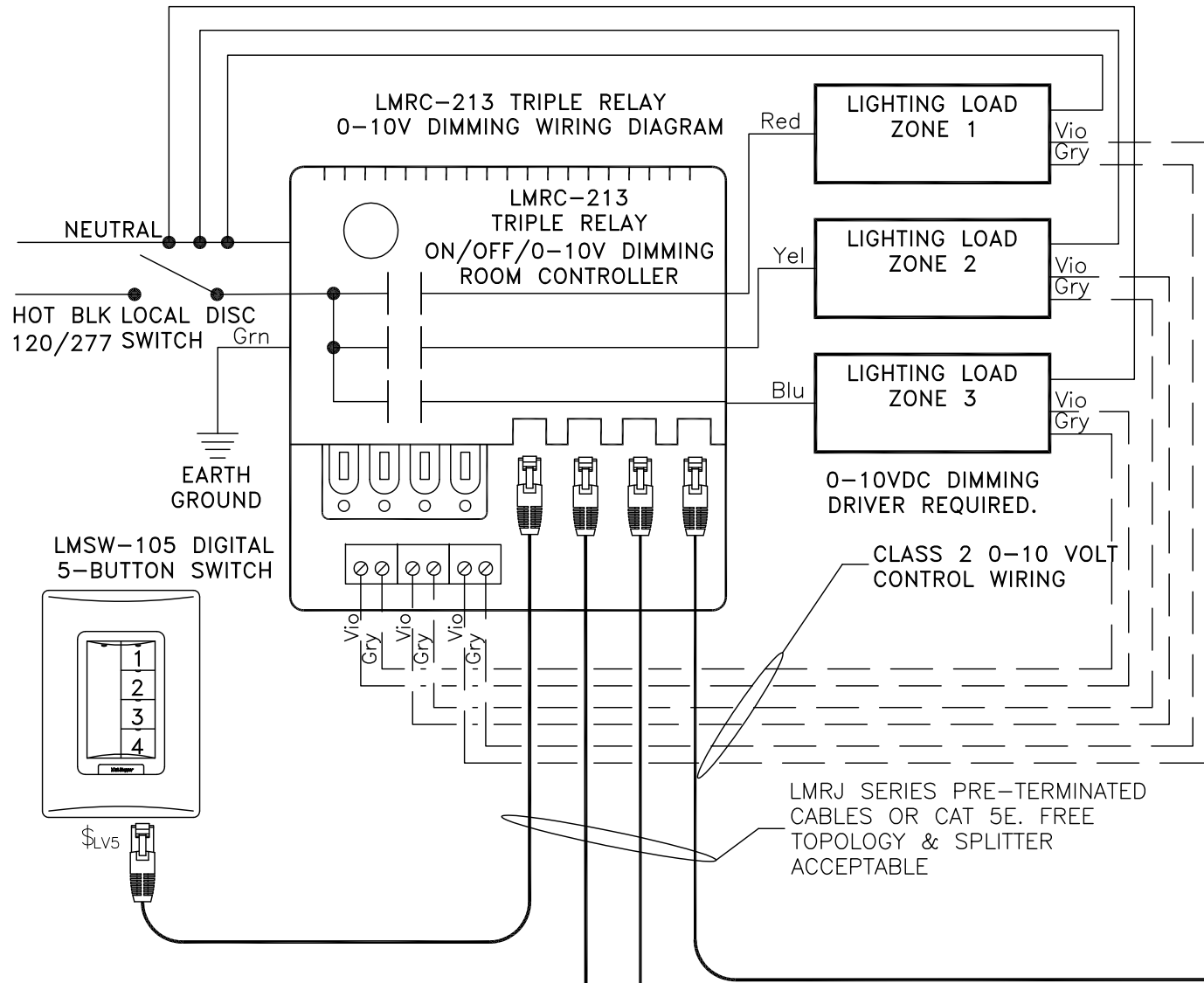
- A. USE GREEN JACKETED CAT 5E CABLE TO AVOID CONFUSION WITH VOICE, DATA, A/V AND SECURITY.
- B. CAT 5E WIRING LENGTHS SHALL BE FIELD ASSEMBLED BY THE CONTRACTOR. CAT 5E CABLES NEED NOT BE INSTALLED IN CONDUIT IN THE ACCESSIBLE CEILING SPACE. CABLE MUST BE IN CONDUIT DOWN WALLS AND CONCEALED AREAS.
- C. ALL COMPONENTS ARE WATTSTOPPER DLM SERIES OR APPROVED EQUAL.
- D. INSTALL THE ROOM CONTROLLER ON A 4"X4" BOX AND A SEPARATE 4"X4" BOX FOR THE POWER LIGHTING CIRCUIT(S).
- E. LOCATE ALL ROOM CONTROLLER(S), DATA INTERFACE MODULES AND OUTPUT RELAY MODULE ABOVE THE DOOR IN THE SPECIFIED ROOM.
- F. ROOM CONTROLLERS CAN BE LINKED TOGETHER TO ESTABLISH MULTIPLE ZONES AS REQUIRED.
- G. LOCATE OCCUPANCY SENSOR TO GIVE THE BEST COVERAGE, CONTRACTOR SHALL SUPPLY ENOUGH CABLE TO MOVE THE SENSOR AROUND.
- H. INSTALL 5 BUTTON DIGITAL SWITCH IN EACH ROOM AT EACH DOOR AS SHOWN.
- I. PROVIDE EXTRA CABLE AT SENSORS TO MOVE ABOUT THE CEILING TO ACCOMMODATE PROPER LOCATION DURING COMMISSIONING.
- J. LOCAL DISCONNECT SWITCH LOCATED AT THE CONTROLLER.
- K. MARK ALL DEVICES WITH THE INSTALLED DATE.
- L. NO WALL SENSORS.



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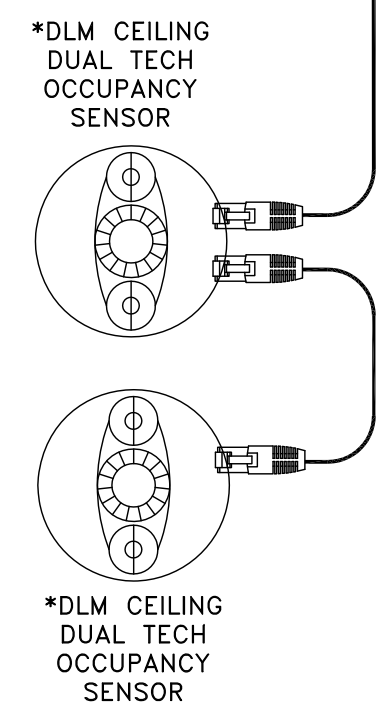
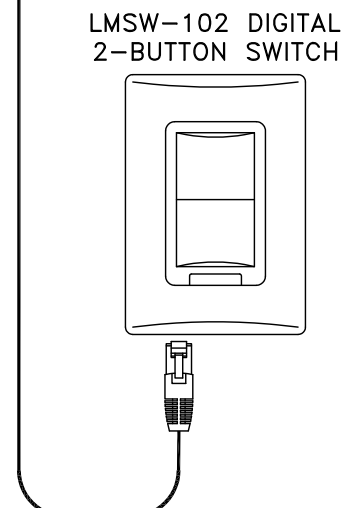
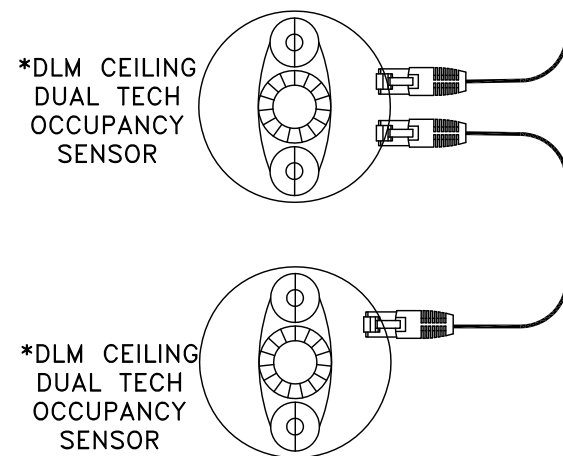
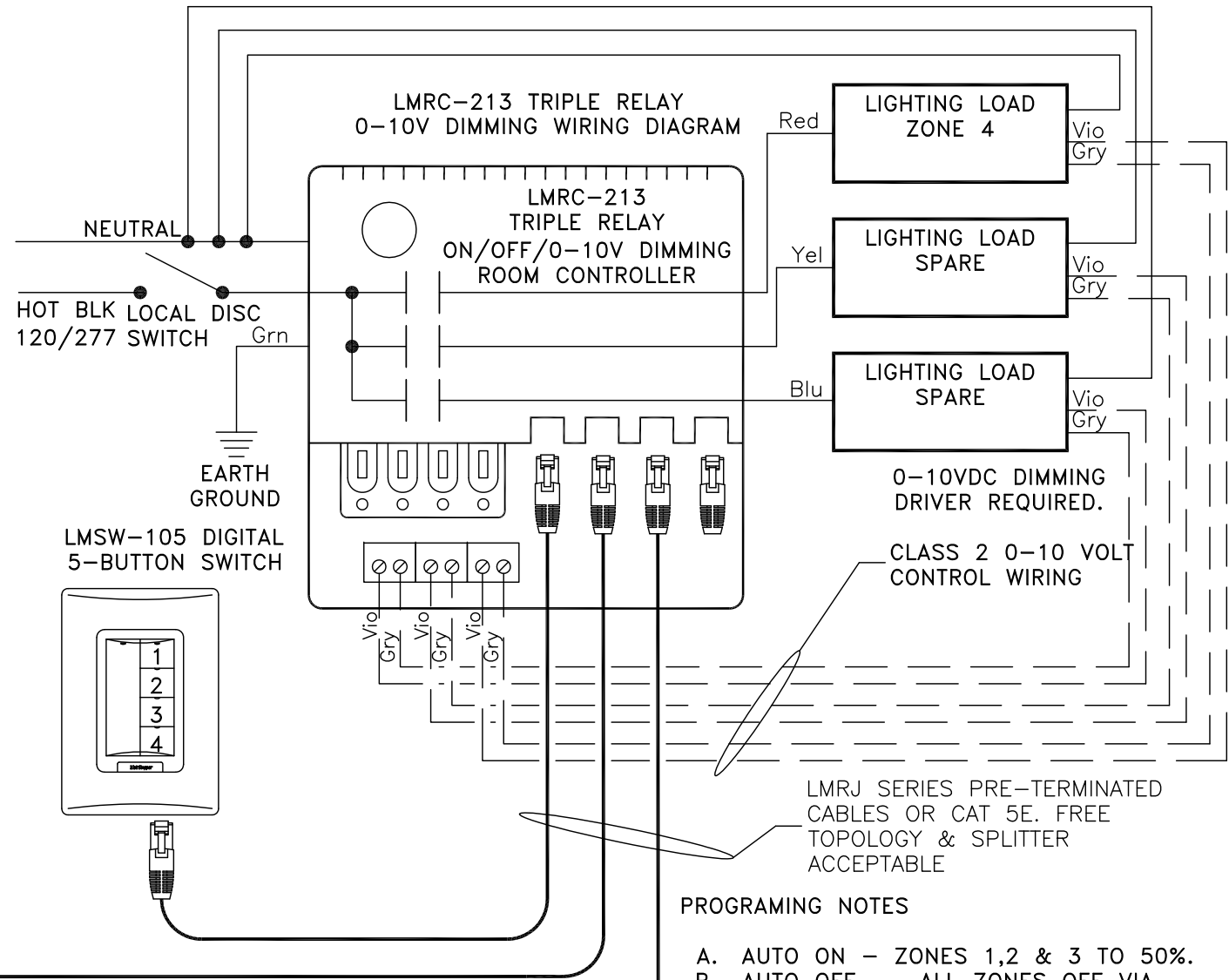
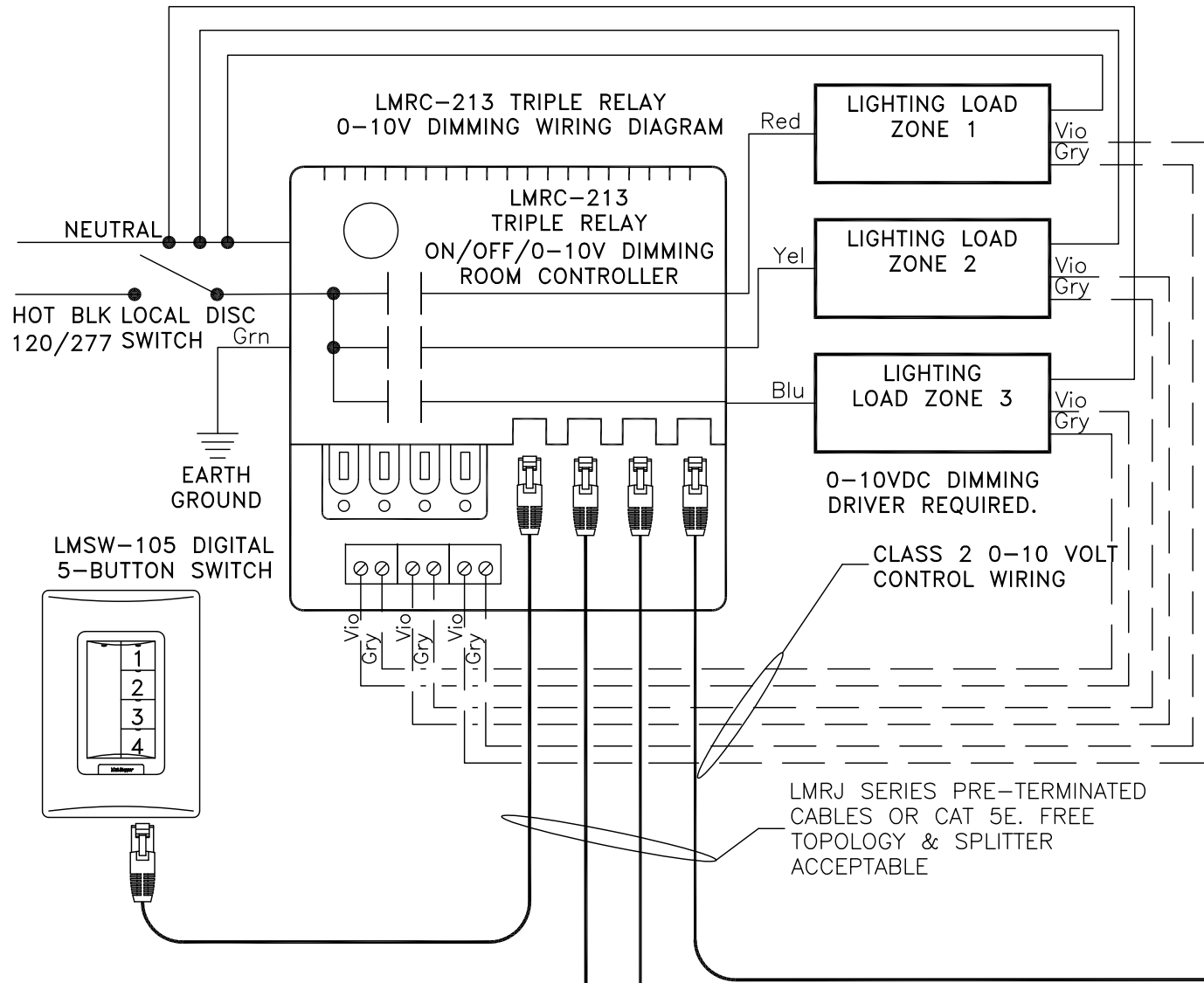
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- PROGRAMING NOTES**
- A. AUTO ON - ZONES 1,2 & 3 TO 50%.
  - B. AUTO OFF - ALL ZONES OFF VIA OCCUPANCY SENSOR AFTER 15 MIN. OF NO MOTION
  - C. LABEL 1 - 100% - MANUAL ON - 100% LIGHTS EXCEPT ZONE 4 & 6
  - D. LABEL 2 - INSTRUC - SCREEN ZONE 1 TO 100%, ZONE 2 50%, ZONE 3 OFF. MANUAL RAISE/LOWER ALL ZONES EXCEPT ZONE 4 & 6.
  - E. LABEL 3 - A/V - ZONE 1 OFF. ZONE 2 AT 50% AND ZONE 3, 4, 5 & 6 OFF.
  - F. LABEL 4 - SINKS - ZONE 4 ON 100%
  - G. PADDLE - USERS ACTIVATE A SCENE BY TAPPING ONE OF THE SCENE BUTTONS. THEY MAY RAISE OR LOWER LEVELS, AND TURN LIGHTS ON/OFF. IN ACTIVE DIM MODE USERS CAN ADJUST THE LEVEL OF A DIMMABLE OR SCENE LOAD BY SELECTING THE LOAD/SCENE BUTTON AND THEN PRESSING AND HOLDING THE PADDLE.
  - H. ZONE 4 & 6 ON SEPARATE LV DIMMABLE SWITCH. ON TO 50% THEN ADJUST.

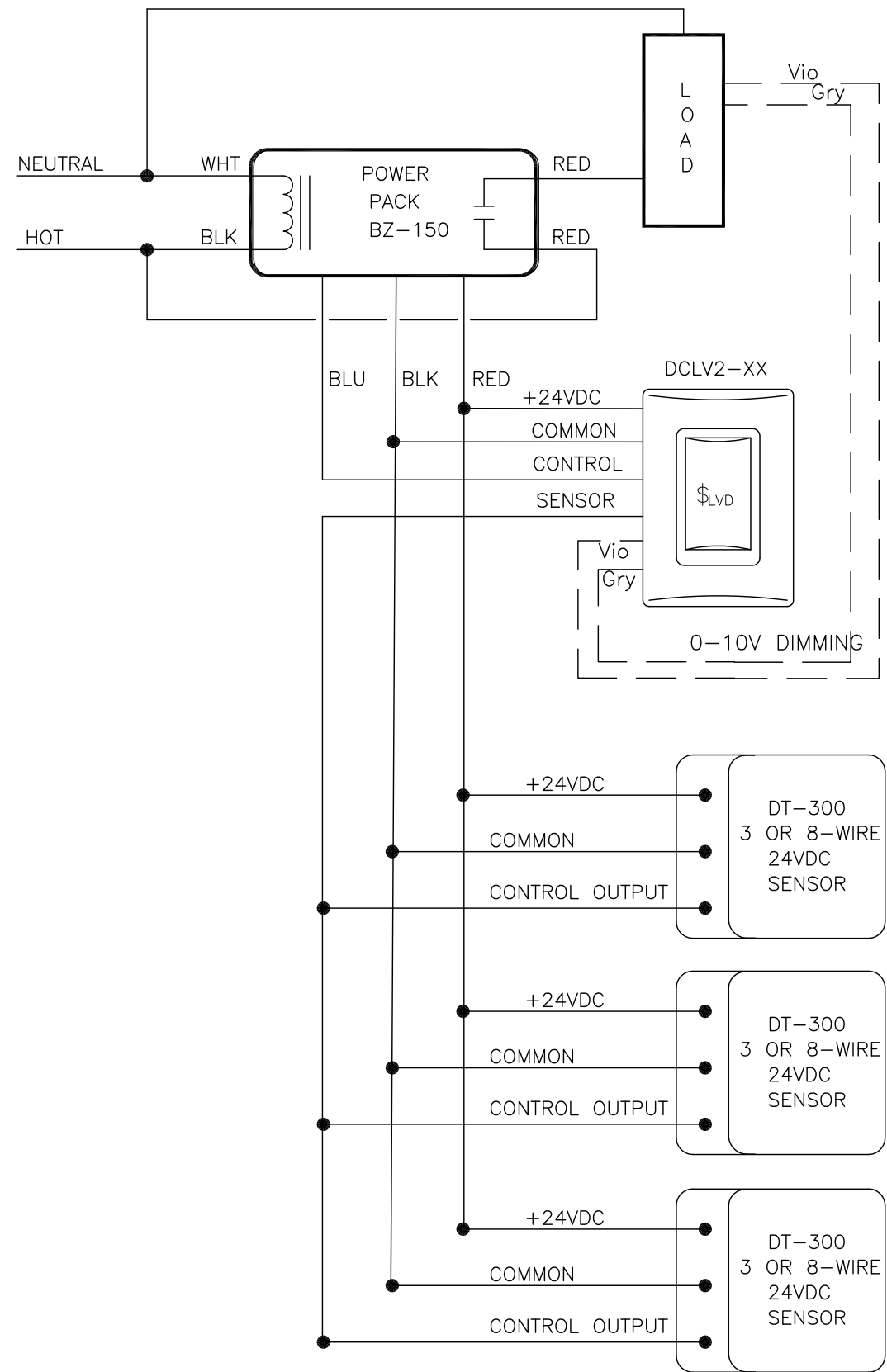
XX E? NO SCALE **DLM WATTSTOPPER RM. 100,103 DETAIL**





- PROGRAMING NOTES**
- A. AUTO ON - ZONES 1,2 & 3 TO 50%.
  - B. AUTO OFF - ALL ZONES OFF VIA OCCUPANCY SENSOR AFTER 15 MIN. OF NO MOTION
  - C. LABEL 1 - 100% - MANUAL ON - 100% LIGHTS EXCEPT ZONE 4
  - D. LABEL 2 - INSTRUC - SCREEN ZONE 1 TO 100%, ZONE 2 50%, ZONE 3 OFF. MANUAL RAISE/LOWER ALL ZONES EXCEPT ZONE 4.
  - E. LABEL 3 - A/V - ZONE 1 OFF. ZONE 2 AT 50% AND ZONE 3 OFF.
  - F. LABEL 4 - SINKS - ZONE 4 ON 100%
  - G. PADDLE - USERS ACTIVATE A SCENE BY TAPPING ONE OF THE SCENE BUTTONS. THEY MAY RAISE OR LOWER LEVELS, AND TURN LIGHTS ON/OFF. IN ACTIVE DIM MODE USERS CAN ADJUST THE LEVEL OF A DIMMABLE OR SCENE LOAD BY SELECTING THE LOAD/SCENE BUTTON AND THEN PRESSING AND HOLDING THE PADDLE.
  - H. ZONE 4 ON SEPERATE LV DIMMABLE SWITCH

XX E? NO SCALE  
**DLM WATTSTOPPER RM. 101 DETAIL**



XX  
E? **CORR CONTROL DETAIL**  
NO SCALE

TYPE	DESCRIPTION	MANUFACTURER	CATALOG NUMBER
A	2X4 RECESSED TROEPPER STYLE WITH A CURVED SMOOTH BASKET LENS, 80 CRI, 5000 RATED LUMENS, 120-277V, 0-10V DIMMING, 4000K COLOR TEMPERATURE, MINIMUM OF 128 LPW AND U.L. LISTED	LITHONIA	BLC-2X4-5000LM-80CRI-40K-AD5M-MINIO-ZT-MVOLT
AEM	SAME AS "A" EXCEPT EMERGENCY BATTERY UNIT IOW	LITHONIA	BLC-2X4-5000LM-80CRI-40K-AD5M-MINIO-ZT-MVOLT-EIOWLCP
B	2X2 RECESSED TROEPPER STYLE WITH A CURVED SMOOTH BASKET LENS, 80 CRI, 4000 RATED LUMENS, 120-277V, 0-10V DIMMING, 4000K COLOR TEMPERATURE, MINIMUM OF 128 LPW AND U.L. LISTED	LITHONIA	BLC-2X2-4000LM-80CRI-40K-AD5M-MINIO-ZT-MVOLT
C	LINEAR 8' INDIRECT/DIRECT FIXTURE MOUNTED TO THE WALL ABOVE MIRROR, 80CRI, 800 LUMENS PER FOOT UP AND 800 LUMENS DOWN LIGHT COMPONENT, 120-277 VOLT, MVOLT, 4000K COLOR TEMPERATURE, MINIMUM DIMMING LEVEL TO 1%, SINGLE CIRCUIT, STANDARD SHEILDING, , WHITE TEXTURED FINISH, 0-10V DIMMING, CLEAR DUST COVER ON TOP AND U.L. LISTED.	Mark Arch Lighting	52LWDLCB-8FT-MSLB-80CRI-40K-800LMF180CRI1400K-1800LMFMINI-SCT-MVOLT-WHIT-ZT-DC
D	5" ROUND SURFACE MOUNT SHOWER LIGHT, MVOLT DRIVER, CRI 90, 700 RATED LUMENS, WHITE HOUSING	LITHONIA	JSF-5IN 07LM-40K-90CRI-MVOLT-WH
F	48" LED STRIP LIGHT, SYMETRIC REFLECTOR, 3000 LUMENS RATED, DROP LENS, MVOLT, 4000K COLOR TEMPERATURE, 80CRI, WHITE FINISH AND U.L. LISTED.	LITHONIA	CLX L48 3000LM SEF RDL MVOLT GZ10 40K 80CRI WH
FEM	FEM SAME AS TYPE F EXCEPT EMERGENCY BATTERY UNIT RATED AT IOW	LITHONIA	CLX L48 3000LM SEF RDL MVOLT GZ10 40K 80CRI WH EIOLCP
X	RED EXIT SIGN WITH DUAL OR SINGLE FACE EXIT SIGN, 120-277V 90 MINUTE BATTERY UPON POWER LOSS, REMOVABLE ARROWS, AND U.L. LISTED	LITHONIA	LHQM-LED-WH-R-HO RO-5D
XR	REMOTE HEAD TIED TO EXXIT SIGN, WEATHERPROOF SINGLE HEAD	LITHONIA	ELA-QWP-L0309

**INSTALLATION NOTES**

- A. ALL COMPONENTS ARE WATTSTOPPER SERIES. UNLESS NOTED OTHERWISE
- B. INSTALL THE ROOM POWER PACK(S) ON A 4"X4" BOX(S).
- C. LOCATE ALL CONNECTIONS AND OUTPUT RELAY MODULE ABOVE THE DOOR IN THE SPECIFIED ROOM.
- D. LOCATE OCCUPANCY SENSOR TO GIVE THE BEST COVERAGE, CONTRACTOR SHALL SUPPLY ENOUGH CABLE TO MOVE THE SENSOR AROUND.
- E. INSTALL DCLV2 SWITCH IN EACH ROOM
- N. NO WALL SENSORS.

**PROGRAMING NOTES**

- A. AUTO ON - ALL TO 50%.
- B. AUTO OFF - ALL OFF VIA OCCUPANCY SENSOR AFTER 15 MIN. OF NO MOTION
- C. PRESS SWITCH TWICE 100% ON -100% LIGHTS ON
- D. PRESS SWITCH ONCE - LAST NON-ZERO LEVEL
- E. PRESS & HOLD - TO RAISE LIGHT LEVEL
- F. PRESS & HOLD - TO LOWER LIGHT LEVEL
- G. PRESS ONCE - LIGHTS FADE OFF



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PANELBOARD SCHEDULE													
PANEL : HD				FED FROM: MDP				O.C. PROT. : MLO					
MOUNTING : SURFACE								VOLTAGE : 480/277					
LOCATION : ELEC ROOM								BUSSING : 100A					
AIC :								3 PHASE, 4 WIRE + GND					
CKT. NO.	ITEM OR AREA SERVED	O.C. PROT.	LTG. VA	REC. VA	MTR. VA	PH.	MTR. VA	REC. VA	LTG. VA	O.C. PROT.	ITEM OR AREA SERVED	CKT. NO.	
1	EMERGENCY LTS & EXIT	20/1	1000			A				20/1	SPARE	2	
3	STORAGE COMP RM LIGHTS	20/1	1250			B			1250	20/1	NORTH AREA LTS	4	
5	COMPTER & OFF N. LTS	20/1	1250			C			1250	20/1	NORTH AREA LTS	6	
7	S. W. AREA LTS	20/1	1250			A	6333			-		8	
9	LTS S. CHESTER AREA	20/1	1250			B	6333			30/3	VAV -1, 2, 3 4, 5 6, 7 ,8	10	
11	LTS S. EAST AREA	20/1	1250			C	6333			-	NEW	12	
13	LOW VOLTAGE XF	20/1			250	A			1250	20/1	204 DATA PROCESSING LTS	14	
15	202 OFFICE OCCUPATIOS LTS	20/1	1250			B			1250	20/1	208 MARKET MGMT LTS	16	
17	207 MARKET MGMT LTS	20/1	1250			C			1250	20/1	207 MARKET MGMT	18	
19	SPARE	20/1				A				20/1	SPARE	20	
21	HALLWAY/LOBBY213 LTS	20/1	1000			B				20/1	SPARE	22	
23	SPARE	20/1				C	6000			-		24	
25	NEW BREAKER	-			8360	A	6000			30/3	EDH-#2	26	
27	RTU-1(OLD EDH#1)	40/3			8360	B	6000			-		28	
29	VERIFY	-			8360	C	0			20/1	SPARE	30	

NOTES :  
GE-NHB PANEL  
TEF BREAKERS

LOAD	CONN. KVA LOAD	DEMAND FACTOR %	DEMAND KVA LOAD
LIGHTING	17	100%	17
REC.	0	50%	0
MOTORS	62.329	80%	49.863
TOTALS	79.329		66.863

LOAD	CONN. KVA/PHASE	DEMAND FACTOR %	DEMAND KVA LOAD
LIGHTING			
A	3.5	100%	3.5
B	7.25	100%	7.25
C	6.25	100%	6.25
REC.			
A	0	50%	0
B	0	50%	0
C	0	50%	0
MOTORS			
A	20.943	80%	16.754
B	20.693	80%	16.554
C	20.693	80%	16.554
TOTALS			
A	24.443		
B	27.943		
C	26.943		
TOTAL	79.329		

FEEDER VOLTAGE : 480/277	
FEEDER LOAD:	95.53 :AMPS
DEMAND LOAD:	80.52 :AMPS
INTERRUPT. CAPACITY:	0

General Note:  
IF THE OLD EDH#1 IS NOT BEING REPLACED THEN ADJUST BREAKERS IN PANEL TO GET A 3 POLE POSITION FOR THE NEW RTU. USE 20,22, 24 BY ADJUSTING EDH#2 BREAKER. PROVIDE NEW BREAKER

PANELBOARD SCHEDULE													
PANEL : EP-CB				FED FROM:				O.C. PROT. : MLO					
MOUNTING : FLUSH EXIST								VOLTAGE : 208/120					
LOCATION : RM 105								BUSSING : 60A					
AIC : 14,000								3 PHASE, 4 WIRE + GND					
CKT. NO.	ITEM OR AREA SERVED	O.C. PROT.	LTG. VA	REC. VA	MTR. VA	PH.	MTR. VA	REC. VA	LTG. VA	O.C. PROT.	ITEM OR AREA SERVED	CKT. NO.	
1	UNKNOWN	20/1				A				20/1	UNKNOWN	2	
3	UNKNOWN	20/1				B				20/1	UNKNOWN	4	
5	UNKNOWN	20/1				C				20/1	UNKNOWN	6	
7	RM. 100 REC (4)	20/1		720		A				20/1	UNKNOWN	8	
9	RM. 100 REC (4)	20/1		720		B				20/1	UNKNOWN	10	
11	RM 100 REC 2	20/1		360		C				20/1	UNKNOWN	12	
13	WASHER REC RM 104	20/1		500		A		720		20/1	RM. 100 REC (4)	14	
15	RM. 106 & 101 REC. (5)	20/1		720		B		720		20/1	RM. 100 REC (4)	16	
17	RM. 101 REC (4)	20/1		720		C				20/1	NEW IG RM. 202	18	
19	NEW IG 201	20/1				A				20/1		20	
21	NEW IG 201	20/1				B				20/1		22	
23	PLUGS	20/1				C		720		20/1	RM. 101 REC (4)	24	
25	RM. 105 7 101 REC (5)	20/1		900		A				-		26	
27	DRYER W/ NEUTRAL	40/2		3000		B				30/3	SPARE	28	
29	PLUGS	-		3000		C				-		30	

NOTES :  
NEW 40/2 POLE BREAKER  
NEW LOAD IS MUCH LESS THAN EXISTING REMOVED. 13.14KW REMOVED, 11.4 ADDED LOAD.

LOAD	CONN. KVA LOAD	DEMAND FACTOR %	DEMAND KVA LOAD
LIGHTING	0	100%	0
REC.	12.8	50%	11.4
MOTORS	0	100%	0
TOTALS	12.8		11.4

FEEDER VOLTAGE : 208/120	
FEEDER LOAD:	35.57 :AMPS
DEMAND LOAD:	31.68 :AMPS
INTERRUPT. CAPACITY:	14,000

GENERAL NOTE:  
VERIFY ALL CIRCUITS. ADJUST TO LOCATIONS WITH SPARE OR REMOVED LOAD.

LOAD	CONN. KVA/PHASE	DEMAND FACTOR %	DEMAND KVA LOAD
LIGHTING			
A	0	100%	0
B	0	100%	0
C	0	100%	0
REC.			
A	2.84	50%	2.84
B	5.16	50%	5.16
C	4.8	50%	4.8
MOTORS			
A	0	100%	0
B	0	100%	0
C	0	100%	0
TOTALS			
A	2.84		
B	5.16		
C	4.8		
TOTAL	12.8		

project no.  
117 125

dip designs  
4521 n. saginaw way  
pinconning, michigan 48650

CLASSROOM RENOVATION FOR  
**SAGINAW CAREER COMPLEX**  
2100 WEISS STREET SAGINAW, MI 48602

project no.  
**22001**  
18 may 2020  
preliminary  
revisions

sheet of  
**E11 12**

**PANELBOARD SCHEDULE**

**PANEL : EP-CC**      FED FROM: \_\_\_\_\_      **O.C. PROT. : MLO**  
**MOUNTING : FLUSH - EXISTING**      **VOLTAGE : 208/120**  
**LOCATION : ROOM 102**      **BUSSING : 100A**  
**AIC : 14,000**      **3 PHASE, 4 WIRE + GND**

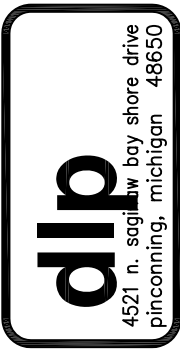
CKT. NO.	ITEM OR AREA SERVED	O.C. PROT.	LTG. VA	REC. VA	MTR. VA	PH.	MTR. VA	REC. VA	LTG. VA	O.C. PROT.	ITEM OR AREA SERVED	CKT. NO.
1	REC. CONF/LCD	20/1		360		A		180		20/1	REC CENTER	2
3	SPARE	15/1				B		180		20/1	REC WALL	4
5	SPARE	20/1				C		360		20/1	AREA SERVED	6
7	SPARE	20/1				A		720		20/1	RM. 100 REC. (4)	8
9	SPARE	20/1				B			2080	60/2	DIMMER RACK	10
11	SPARE	20/1				C			2080	-	UNKNOWN	12
13	SPARE	20/1				A				20/1	EDIT ROOM RACK REC	14
15	RM. 102 & 100 REC (5)	20/1		900		B		540		20/1	RM. 100 REC (3) SOUTH	16
17	SPARE	20/1		720		C		360		20/1	REC STORAGE	18
19	SPARE	20/1				A				20/1	SPARE	20
21	SPARE	20/1				B		720		20/1	SPARE	22
23	JANITOR CLOSET	20/1		180		C		720		20/1	SPARE	24
25	EDIT ROOM REC	20/1		180		A				20/1	SPARE	26
27	DIMMER RACK	60/2	2080			B		360		20/1	RM. 100 REC (2)	28
29	UNKNOWN	-	2080			C				20/1	SPARE	30

**NOTES :**  
GE PANEL NL7Q 100A

LOAD	CONN. KVA LOAD	DEMAND FACTOR %	DEMAND KVA LOAD
LIGHTING	8.32	100%	8.32
REC.	6.48	50%	6.48
MOTORS	0	100%	0
<b>TOTALS</b>	<b>14.8</b>		<b>14.8</b>

FEEDER VOLTAGE : 208/120	
FEEDER LOAD:	41.13 :AMPS
DEMAND LOAD:	41.13 :AMPS
INTERRUPT. CAPACITY:	14,000

LOAD	CONN. KVA/PHASE	DEMAND FACTOR %	DEMAND KVA LOAD
LIGHTING			
A	0	100%	0
B	4.16	100%	4.16
C	4.16	100%	4.16
REC.			
A	1.44	50%	1.44
B	2.7	50%	2.7
C	2.34	50%	2.34
MOTORS			
A	0	100%	0
B	0	100%	0
C	0	100%	0
<b>TOTALS</b>			
A	1.44		
B	6.86		
C	6.5		
<b>TOTAL</b>	<b>14.8</b>		



**CLASSROOM RENOVATION FOR**  
**SAGINAW CAREER COMPLEX**  
 2100 WEISS STREET      SAGINAW, MI 48602

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issue date	18 may 2020
revisions	