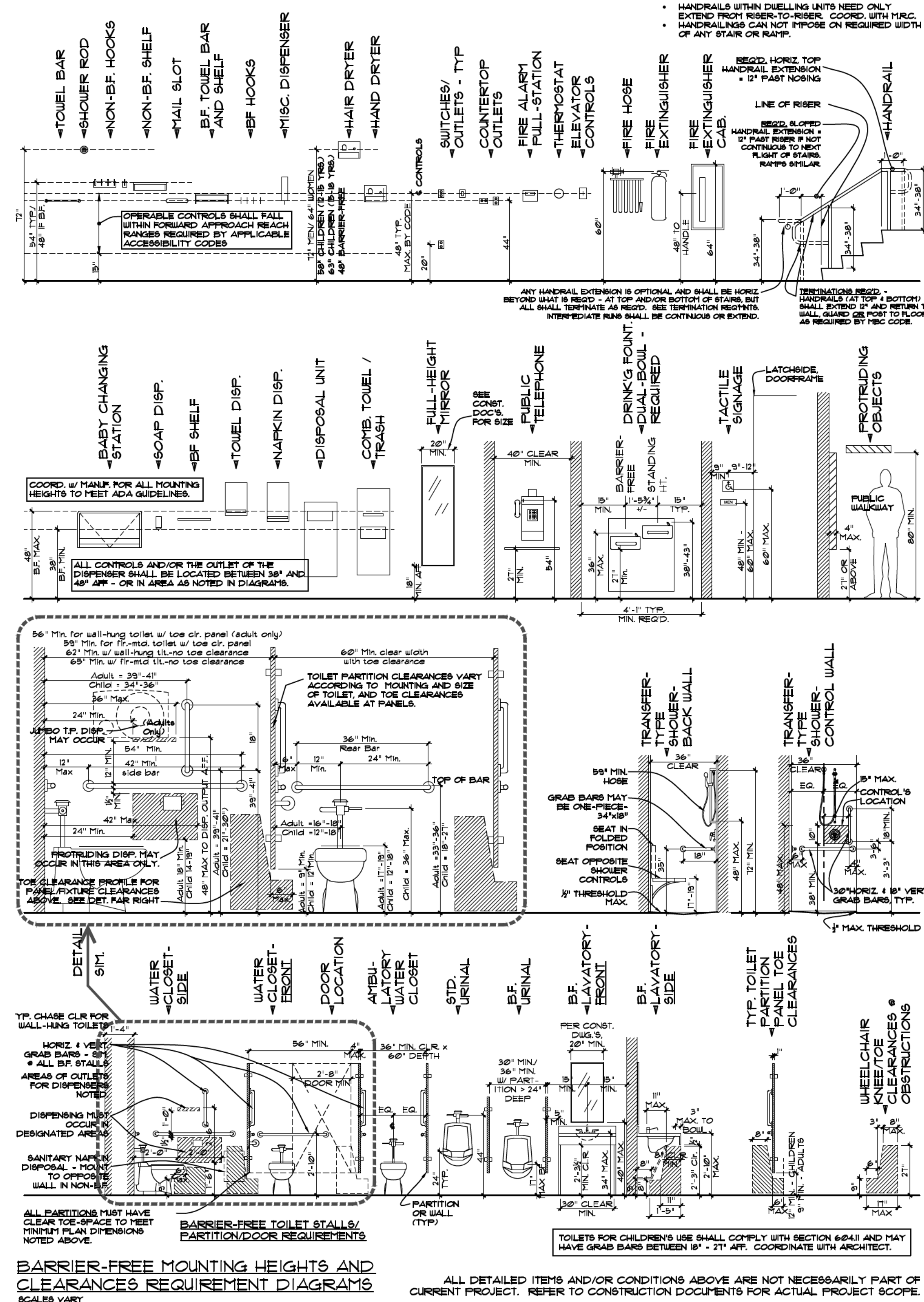


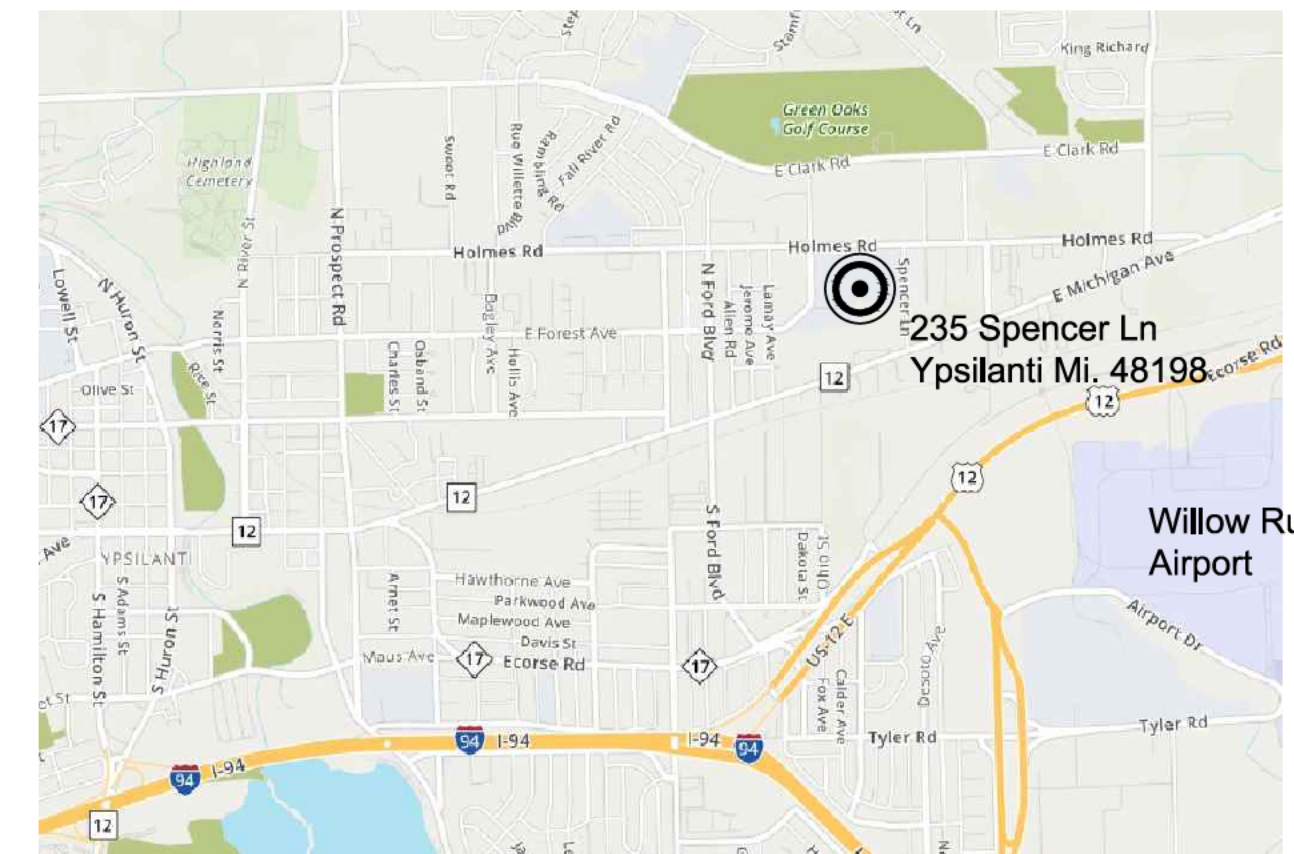
Willow Run Middle School - Renovation

Issued For: Plan Review

235 Spencer Lane
Ypsilanti, Michigan



Sheet	Title
TITLE SHEET	
D1B	DEMOLITION FLOOR 4 REFLECTED CEILING PLANS - WING B
D1F	DEMOLITION FLOOR 4 REFLECTED CEILING PLANS - WING F
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A1F	FLOOR AND REFLECTED CEILING PLANS - WING F
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M02	MECHANICAL SPECIFICATIONS
M03	MECHANICAL SPECIFICATIONS
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MD2.1	FIRST FLOOR PLUMBING DEMOLITION PLAN
MD4.1	FIRST FLOOR SHEET METAL DEMOLITION PLAN
M2.0	UNDERGROUND PLUMBING PLAN
M2.1	FIRST FLOOR PLUMBING PLAN
M4.1	FIRST FLOOR SHEET METAL PLAN
M6.1	MECHANICAL DETAILS
MT1	MECHANICAL SCHEDULES
MT2	MECHANICAL SCHEDULES
E01	ELECTRICAL STANDARDS AND DRAWING INDEX
E02	ELECTRICAL STANDARDS SCHEDULES
E03	ELECTRICAL SPECIFICATIONS
ED1.1	FIRST FLOOR ELECTRICAL DEMOLITION PLAN
E2.1	FIRST FLOOR LIGHTING PLAN
E3.1	FIRST FLOOR POWER PLAN

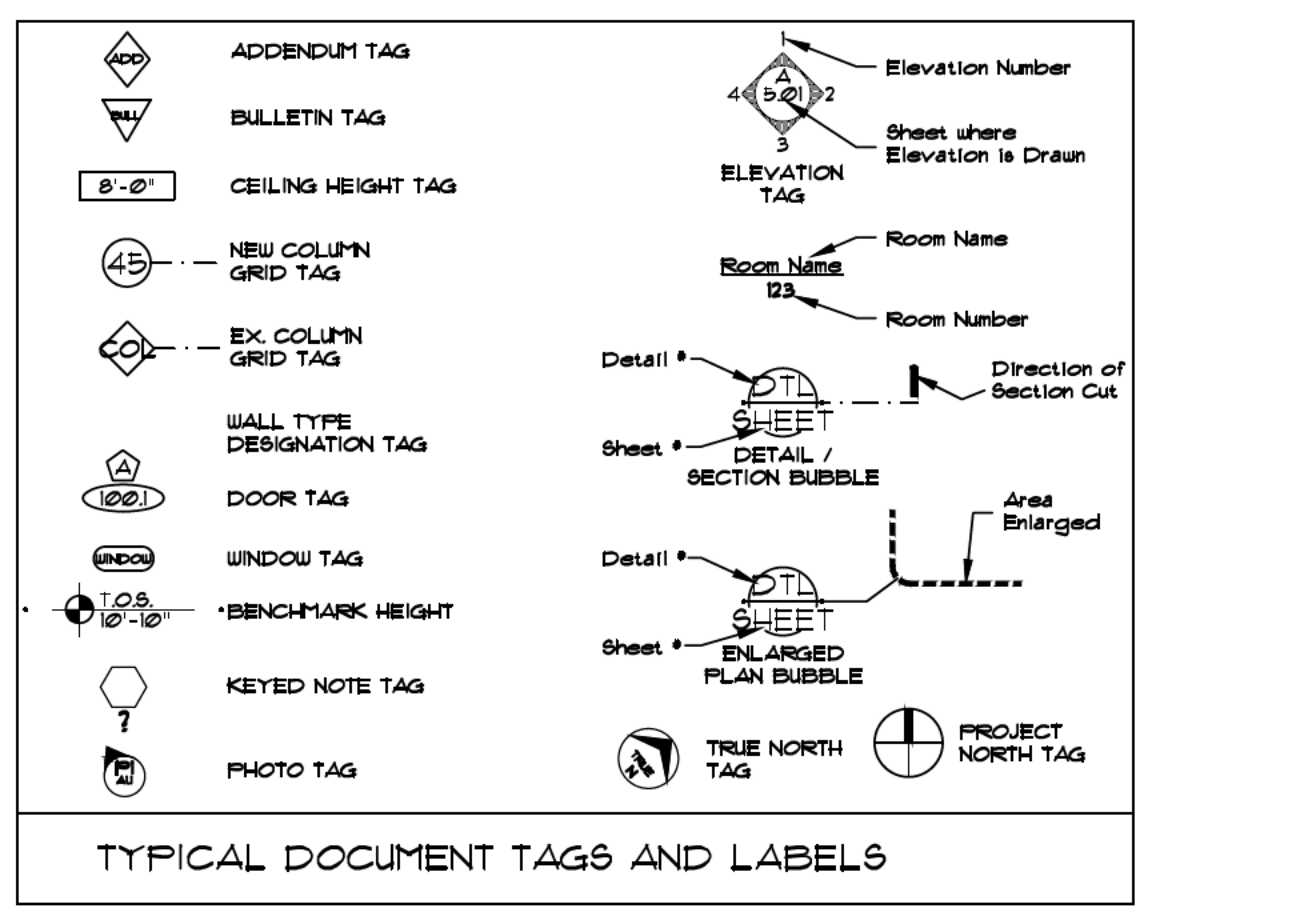


1 Location Map
SCALE: none

Willow Run Middle School @
235 Spencer Ln. Ypsilanti Mi. 48198

Building Summary:
 EX. BUILDING FLOOR AREA - 1ST FLOOR: 257,308. S.F
 BUILDING FLOOR AREA RENOVATED: APPROX. 1,424 S.F
 USE GROUP: EDUCATIONAL (E) - EXISTING
 FULLY SPRINKLERED
 CONSTRUCTION TYPE: IIIB - EXISTING
 DESIGN OCCUPANCY: EXISTING & UNAFFECTED

Code References:
 2015 MICHIGAN BUILDING CODE
 2015 REHABILITATION CODE FOR EXISTING BUILDINGS
 2017 NATIONAL ELECTRIC CODE - PART 8-ELECTRICAL CODES RULES
 2015 MICHIGAN MECHANICAL CODE
 2015 MICHIGAN PLUMBING CODE
 ICC/ANSI A117.1-2009



LIFE - SAFETY NOTES
 1. ALL TEMPORARY CONSTRUCTION SMOKE, FIRE, DUST, NOISE, AND EGRESS BARRIERS SHALL BE CONFIGURED, DETAILED, AND INSTALLED BY THE CONTRACTOR WITH INPUT FROM THE OWNER AND ANY GOVERNING AUTHORITY HAVING JURISDICTION. TEMPORARY CONSTRUCTION BARRIERS ARE NOT SHOWN ON THE DRAWINGS.

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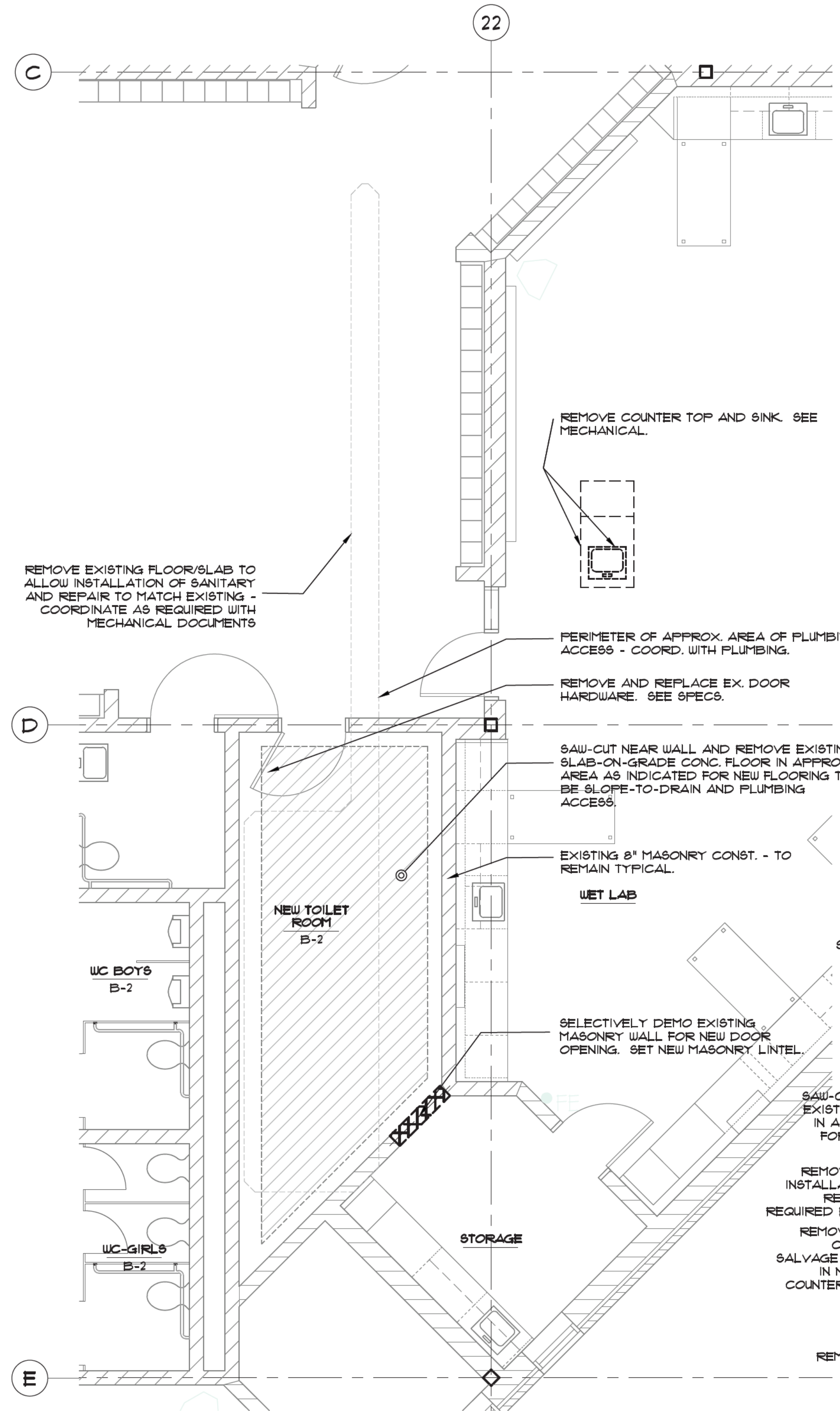
Mitchell and Mouat architects

Date: 8-26-19
Issued For: Construction

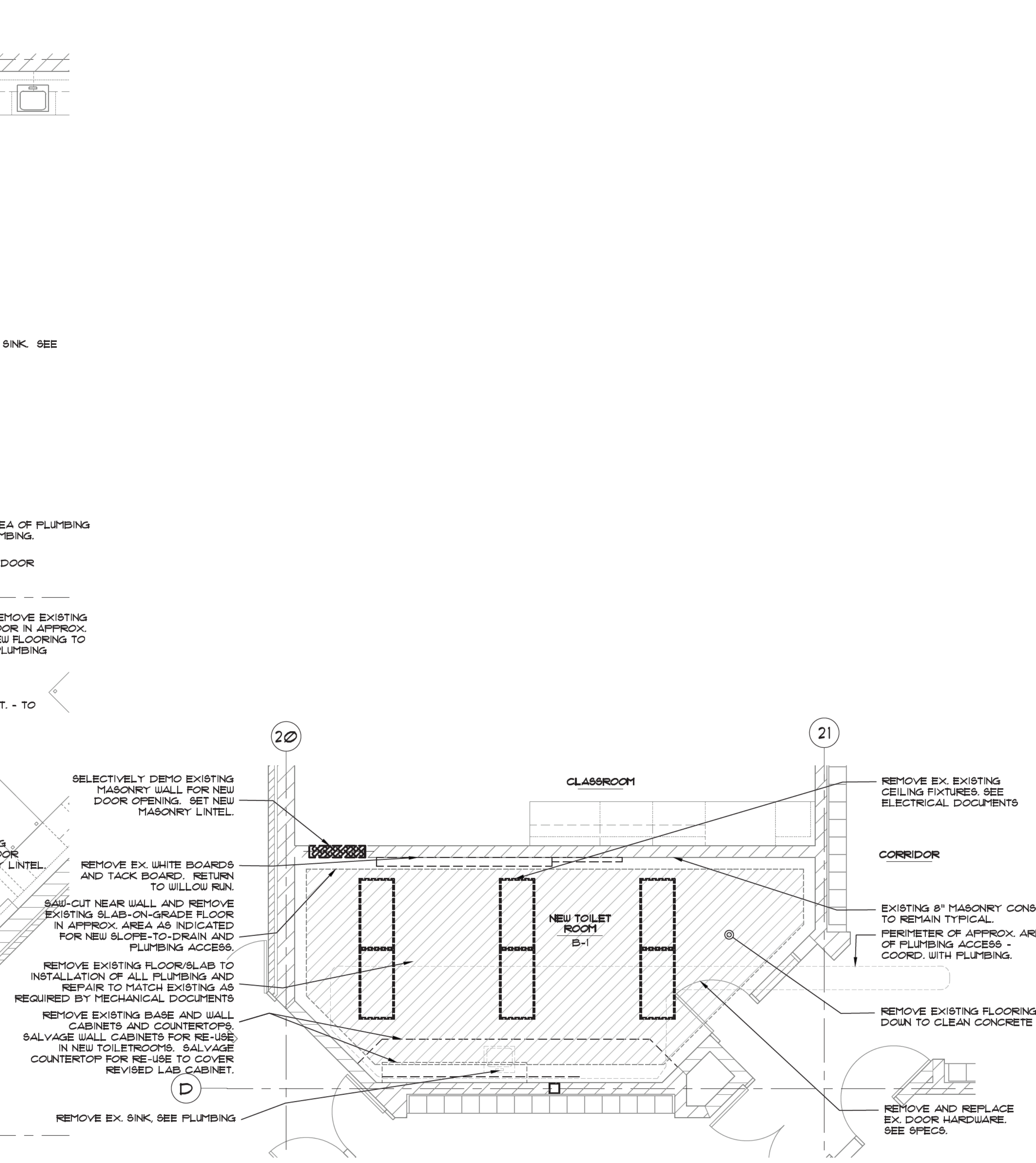
Willow Run Middle School
235 Spencer Ln.
Ypsilanti Mi. 48198
Project Number: 1916

Title Sheet

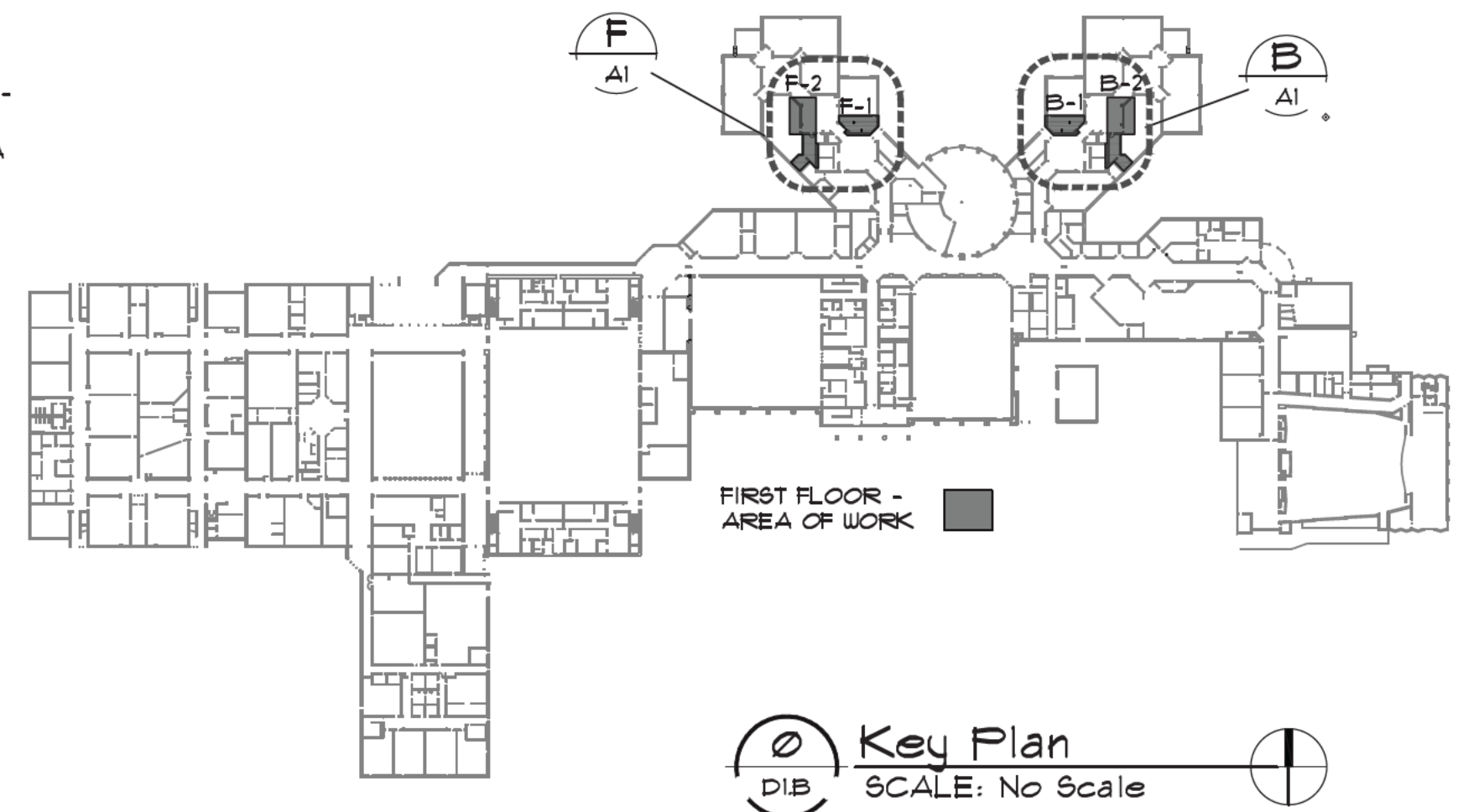
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2 DEMO PLAN TOILET ROOM B-2
 DIB SCALE: 1/4"=1'-0"

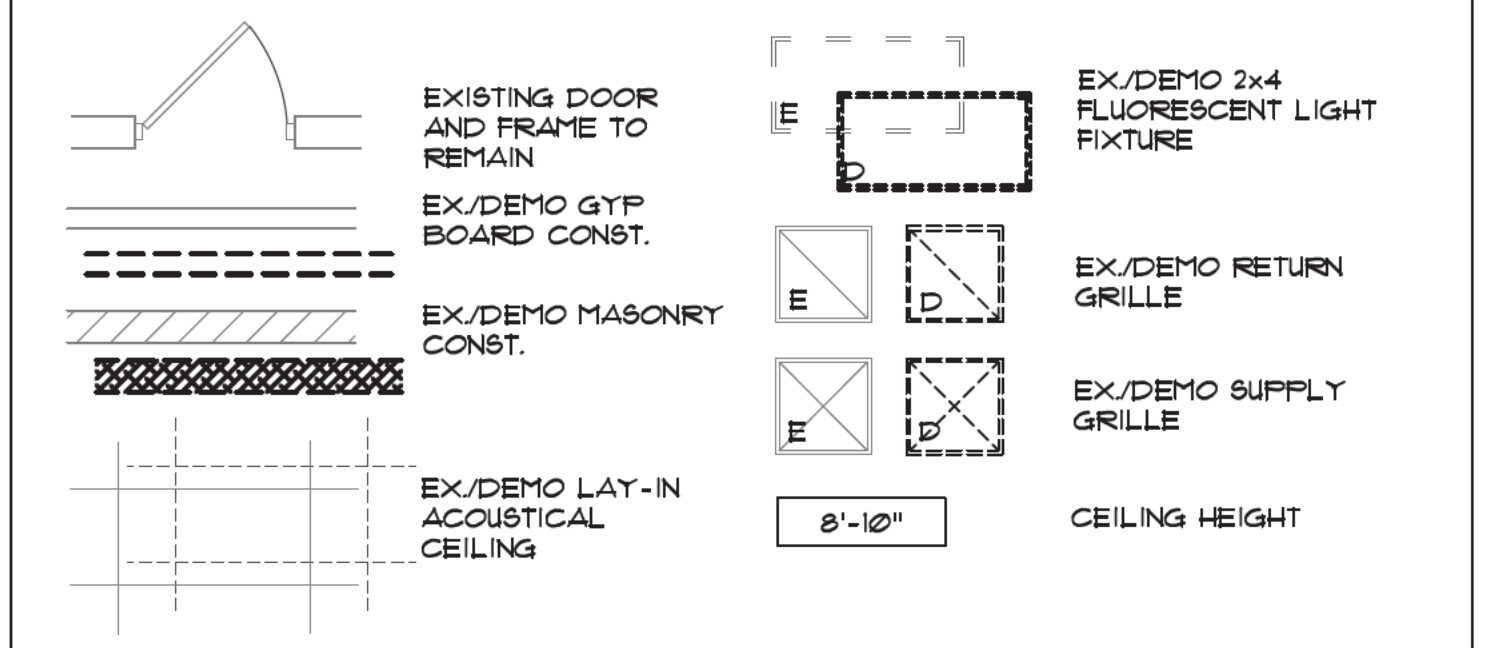


1 DEMO PLAN TOILET ROOM B-1
 DIB SCALE: 1/4"=1'-0"



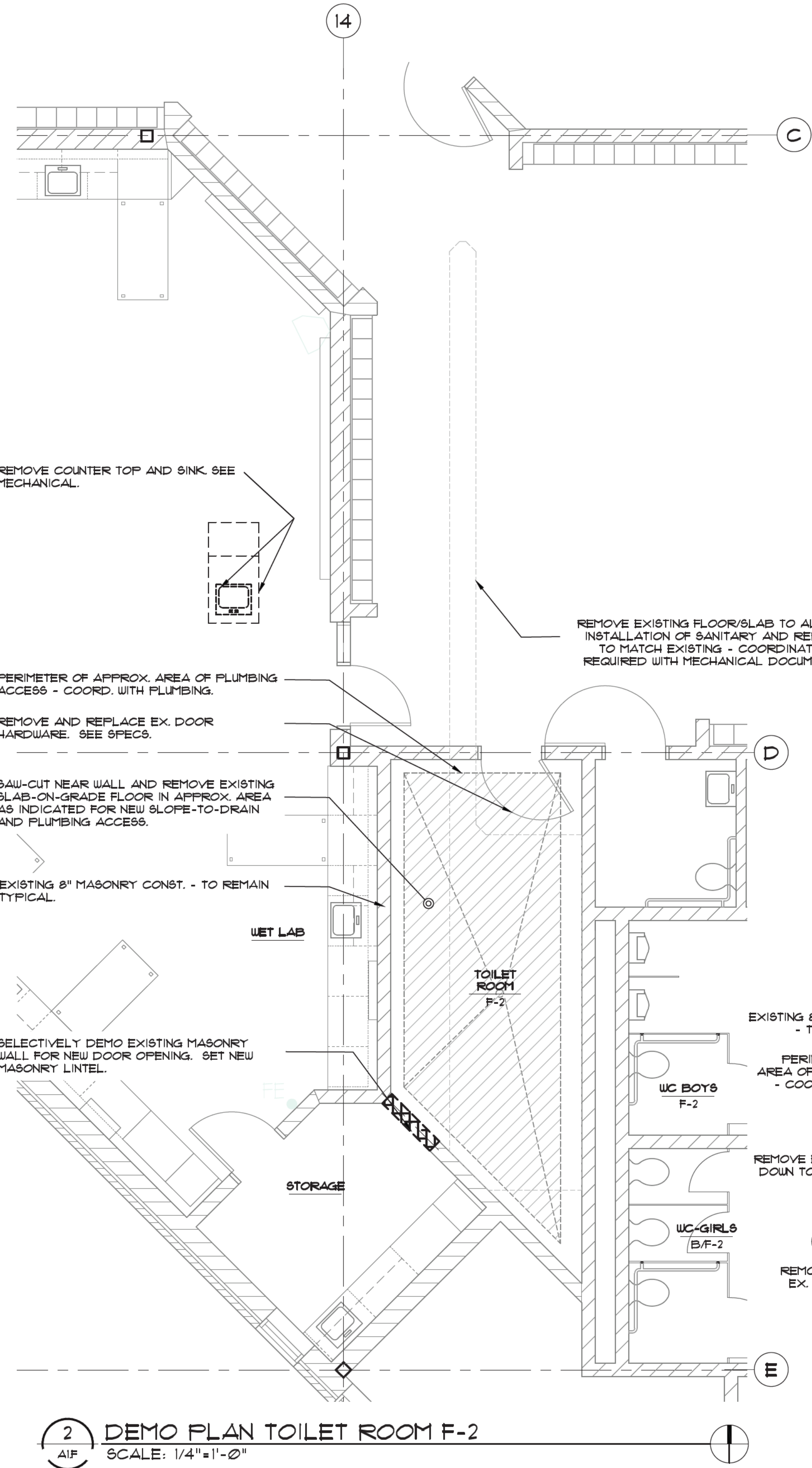
Key Plan
 DIB SCALE: No Scale

Demolition Plan Legend

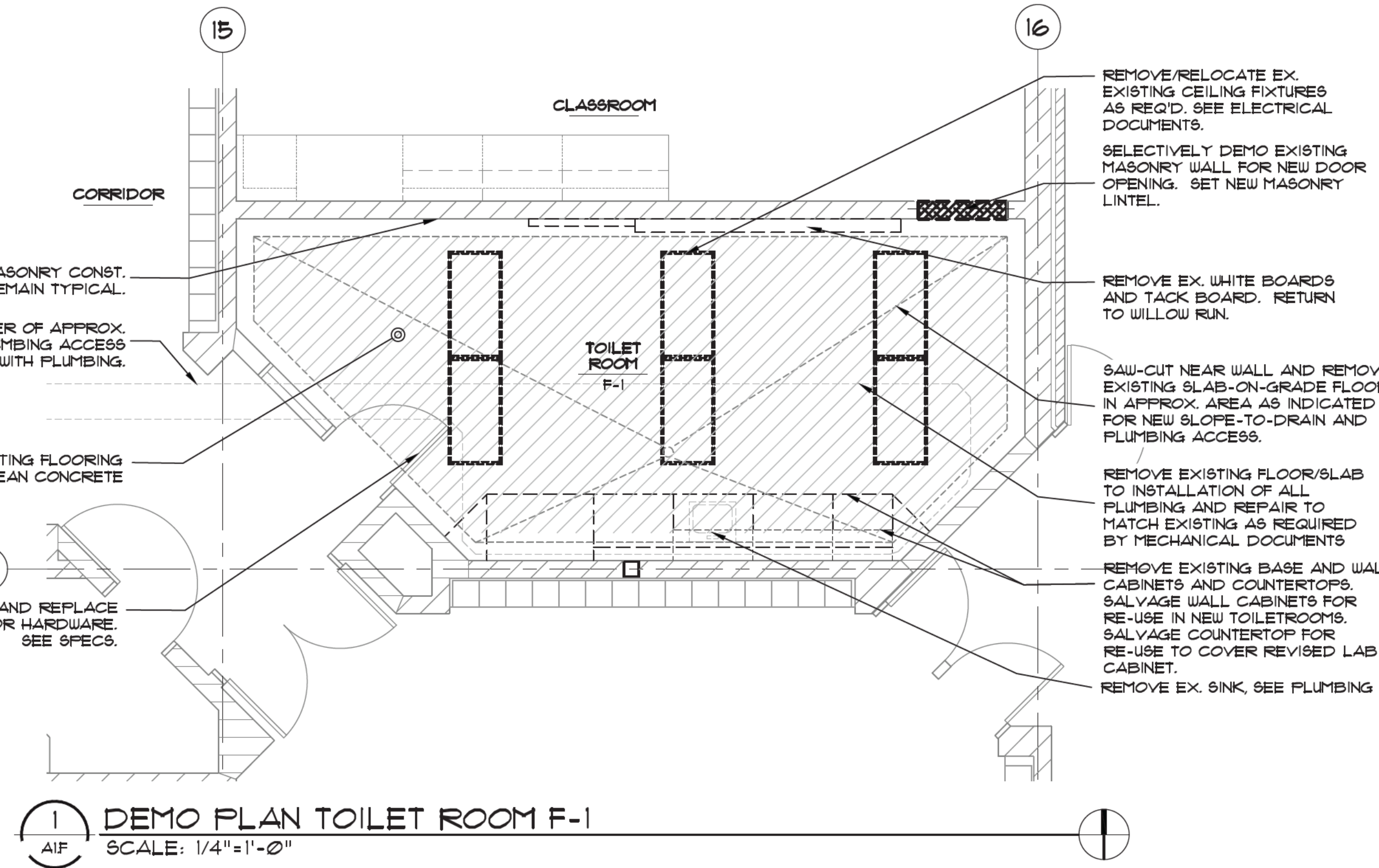


DEMOLITION NOTES:

1. DEMOLITION PLANS MAY SHOW EXISTING EQUIP. THAT WILL REQUIRE SALVAGING/REINSTALLATION AFTER NEW CONSTRUCTION IS IN PLACE. PROTECT IN PLACE ALL FIXTURES AND SURFACES INDICATED TO REMAIN. COORDINATE WITH WILLOW RUN FOR SALVAGED MATERIAL THAT MAY BE USED FOR NEW INSTALLATION.
2. COORDINATE DIMENSIONS OF ALL DEMOLITION WITH REQUIREMENTS OF NEW CONSTRUCTION. REFER TO PROPOSED PLANS FOR NEW CONSTRUCTION WHICH REQUIRES THIS DEMOLITION. DEMOLITION CONTRACTOR SHALL BE FULLY AWARE OF ALL NEW CONSTRUCTION AND DETAILS PRIOR TO DEMOLITION.
3. REFER TO ADDITIONAL PLANS INDICATING MECHANICAL/ELECTRICAL WORK FOR COORDINATION OF REQUIRED DEMOLITION.
4. STABILIZE AND PROTECT ALL AREAS ADJACENT TO AREAS OF DEMOLITION.
5. REVIEW DISPOSITION OF ALL ITEMS TO BE SALVAGED/REMOVED WITH THE OWNER IF NOT SPECIFICALLY RESOLVED.
6. PROCEED WITH CAUTION IN REMOVING WALLS AND ENCLOSURES. OPEN HOLES CAREFULLY TO INVESTIGATE THE PRESENCE OF HVAC, ELECTRICAL OR PLUMBING SYSTEMS. IF A CONFLICT IS IDENTIFIED, CONTACT ARCHITECT PRIOR TO CONTINUING WORK.
7. DEMOLITION PLANS AND SPECIFICATIONS MAY NOT FULLY REPRESENT ALL DEMOLITION WORK REQUIRED TO INSTALL NEW WORK IN ACCORDANCE WITH THE CONSTRUCTION DOCUMENTS, BUT ARE INTENDED TO TO SERVE AS GENERAL DEMOLITION GUIDELINES.
8. ALL ITEMS INDICATED WITH DASHED LINES ARE TO BE REMOVED - UNLESS OTHERWISE NOTED. ALL WORK INDICATED WITH SOLID LINES ARE TO REMAIN - UNLESS OTHERWISE NOTED.
9. WHERE ITEMS ARE INDICATED TO BE REMOVED, PATCH SURFACES TO MATCH ADJACENT SURFACES OR PREPARE TO RECEIVE NEW FINISHES WHERE SCHEDULED. FINISHING OF NEW OR EXISTING SURFACES SHALL EXTEND TO THE NEAREST NATURAL BREAK OR TERMINATION FOR A CLEAN, NATURAL, UNBLEMISHED APPEARANCE AT THE END OF CONSTRUCTION.
10. MECHANICAL/ELECTRICAL WORK: REMOVE OR RELOCATE EXISTING FIXTURES AND GRILLES AS REQUIRED FOR PROPOSED LAYOUTS. COORDINATE WITH OWNER FOR ADDITIONAL REQUIREMENTS.



2 DEMO PLAN TOILET ROOM F-2
 A1F SCALE: 1/4"=1'-0"



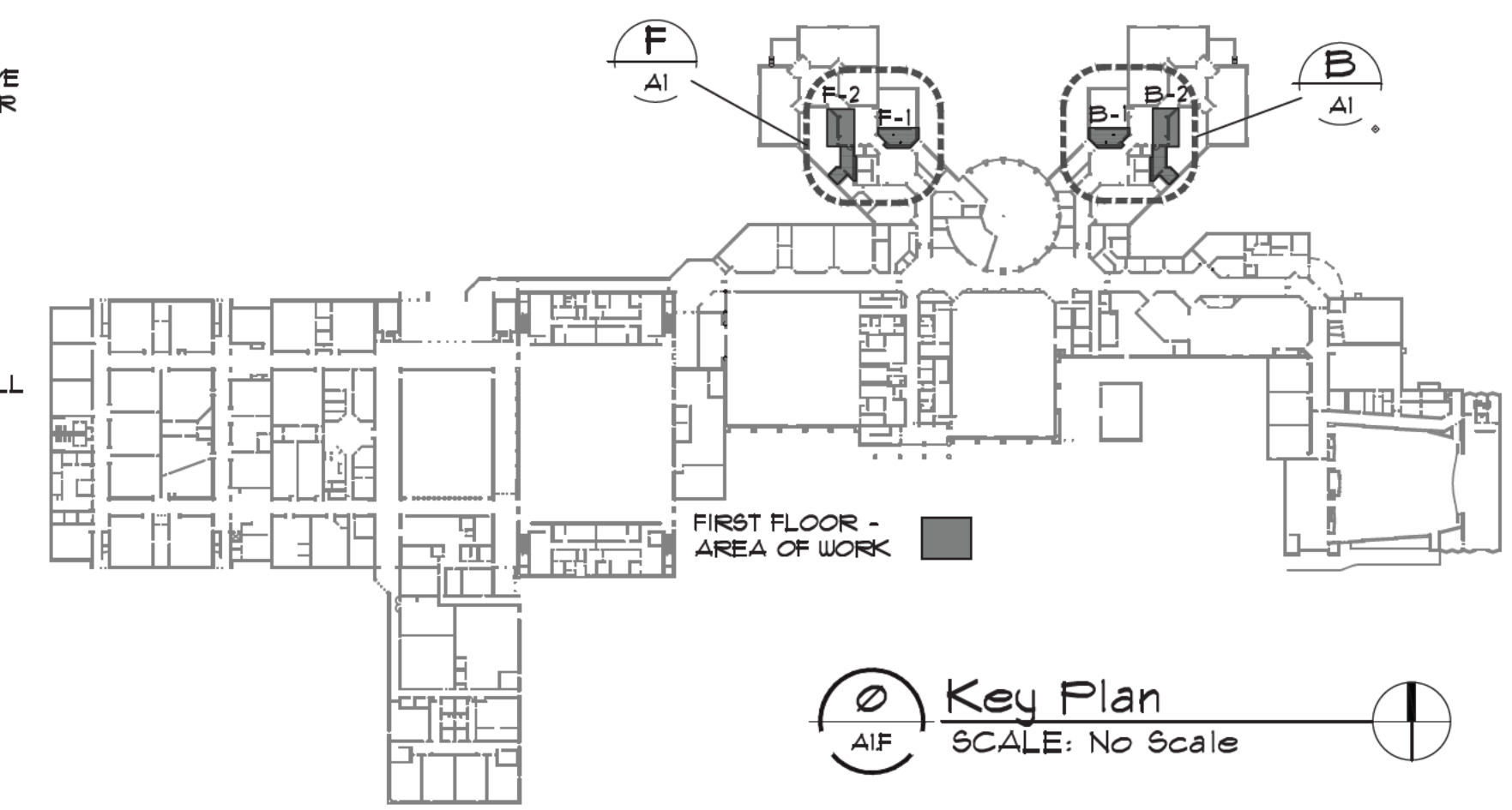
1 DEMO PLAN TOILET ROOM F-1
 A1F SCALE: 1/4"=1'-0"

Demolition Plan Legend

	EXISTING DOOR AND FRAME TO REMAIN		EX./DEMO 2x4 FLUORESCENT LIGHT FIXTURE
	EX./DEMO GYP BOARD CONST.		EX./DEMO RETURN GRILLE
	EX./DEMO MASONRY CONST.		EX./DEMO SUPPLY GRILLE
	EX./DEMO LAY-IN ACOUSTICAL CEILING		CEILING HEIGHT

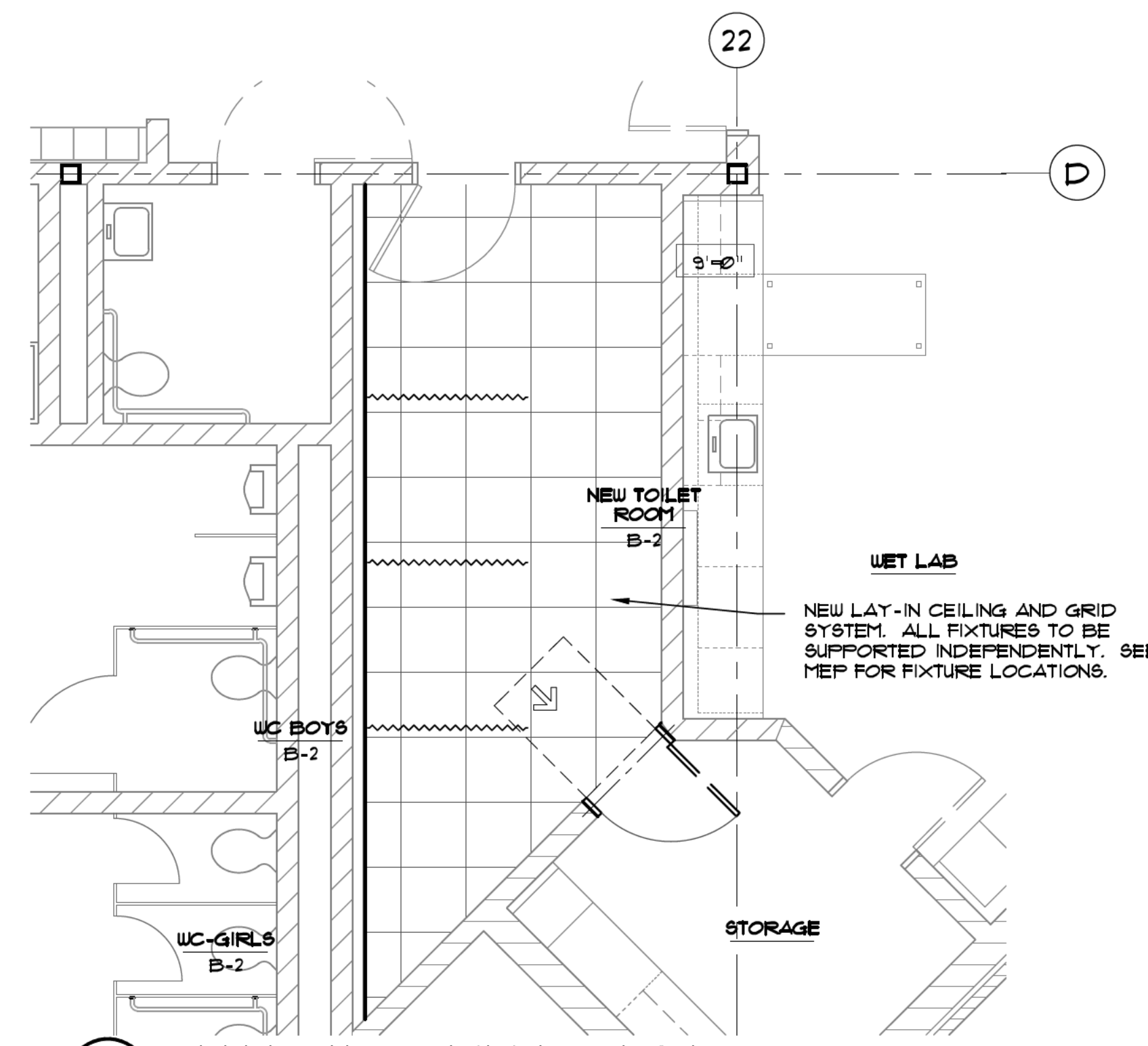
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- MECHANICAL/ELECTRICAL WORK: REMOVE OR RELOCATE EXISTING FIXTURES AND GRILLES AS REQUIRED FOR PROPOSED LAYOUTS. COORDINATE WITH OWNER FOR ADDITIONAL REQUIREMENTS.



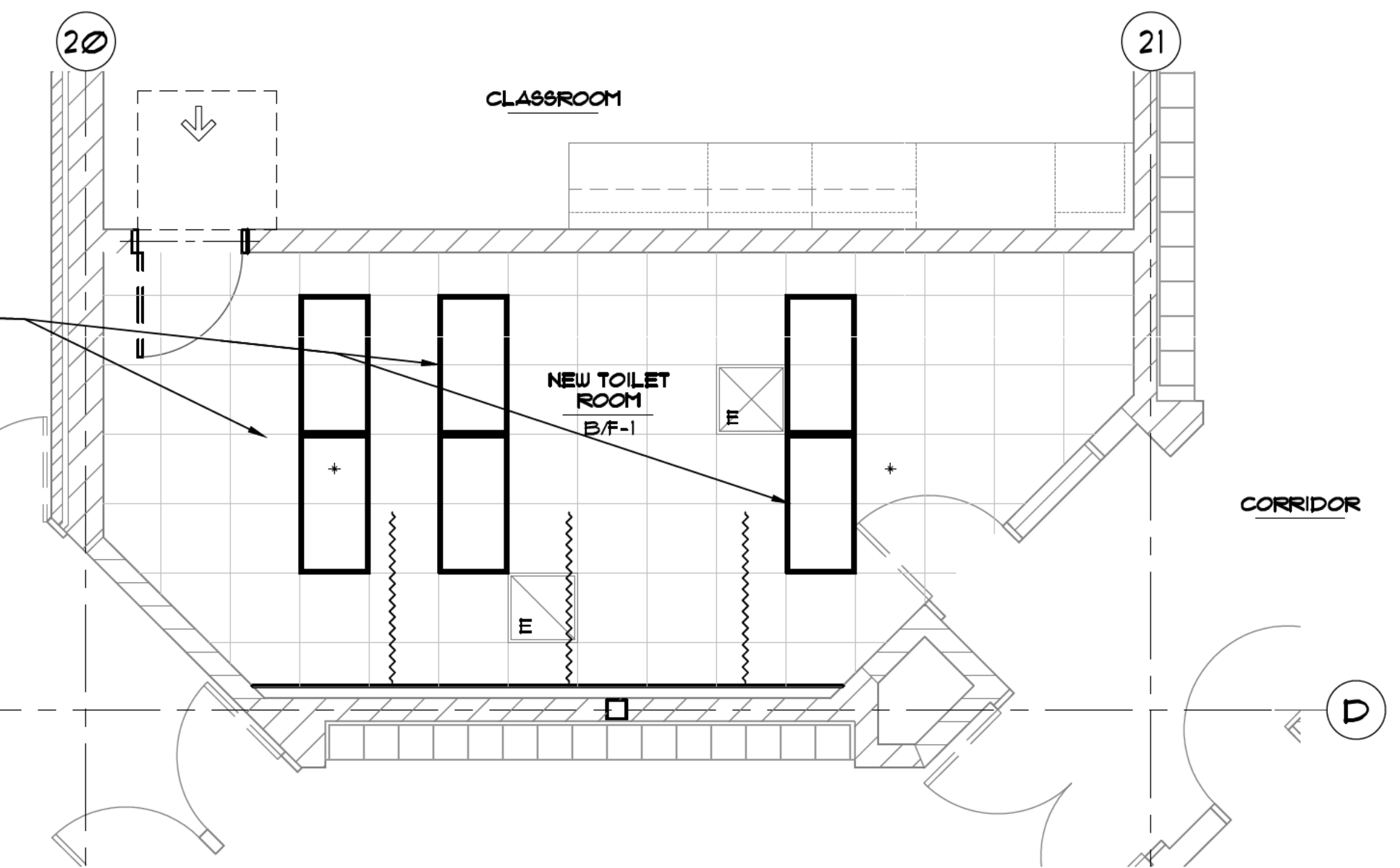
Key Plan
 A1F SCALE: No Scale

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4 REFLECTED CEILING PLAN B-2
SCALE: 1/4"=1'-0"

- SPECIFICATIONS**
- DIVISION 4 -**
1. PROVIDE REINFORCED MASONRY LINTELS FOR ALL NEW OPENINGS.
- DIVISION 6 -**
1. PROVIDE PRESSURE-TREATED LUMBER AND BLOCKING WHEN IN CONTACT WITH CONCRETE - TYPICAL.
 2. PROVIDE FIRE-RESISTANT BLOCKING (NON-COMBUSTIBLE) FOR ALL REQUIRED BLOCKING IN FIRE-SEPARATION WALLS/ASSEMBLIES.
 3. PROVIDE BLOCKING AS REQUIRED FOR ALL WALL-HUNG EQUIPMENT ON DRYWALL ASSEMBLY.
 4. PROVIDE AND INSTALL A HIGH-PRESSURE, PLASTIC LAMINATE, SLAB-DOOR WALL CABINET WITH LOCKS FOR ALL DOORS. PROVIDE 4" WIRE PULLS FOR ALL DOOR PANELS. CABINETS SALVAGED FROM DEMO MAY BE REUSED IF ACCEPTABLE TO WILLOW RUN.
 5. PROVIDE AND INSTALL HIGH-PRESSURE PLASTIC LAMINATE ON MED-DENSITY PARTICULATE BOARD FOR NEW COUNTERTOPS - EQUAL TO WILSONART, FORMICA AND NEVAMAR OR EQUAL. COLORS SHALL BE CHOSEN BY ARCHITECT FROM FULL LINE.
- DIVISION 7 -**
1. PROVIDE FLASHINGS AND MEMBRANES, AS REQUIRED TO BE COMPATIBLE WITH EXISTING MEMBRANES, TO PATCH AND SEAL ALL ROOF-TOP OPENINGS REQUIRED FOR MEP IMPROVEMENTS. COORDINATE WITH BUILDING OWNER FOR ADDITIONAL INFORMATION ON THE EXISTING ROOFING SYSTEM.
 2. PROVIDE INTUMESCENT FIRE-STOP FOR ALL PENETRATIONS THROUGH FIRE-SEPARATION WALLS, AND SPECIFICALLY ALL OPENINGS IN CORRIDOR WALLS.
 3. PROVIDE AND INSTALL A LATEX CAULK, CONTINUOUS WHEN JOINING DISSIMILAR MATERIALS. PAINT ALL LATEX CAULKING. TYPICAL AROUND PERIMETER OF ALL NEW DOOR FRAMES.
 4. PROVIDE AND INSTALL A WHITE, SILICONE-LATEX CAULK TO SEAL AROUND THE PERIMETER OF ALL WHITE LAVATORIES AND/OR OTHER WHITE PLUMBING FIXTURES.

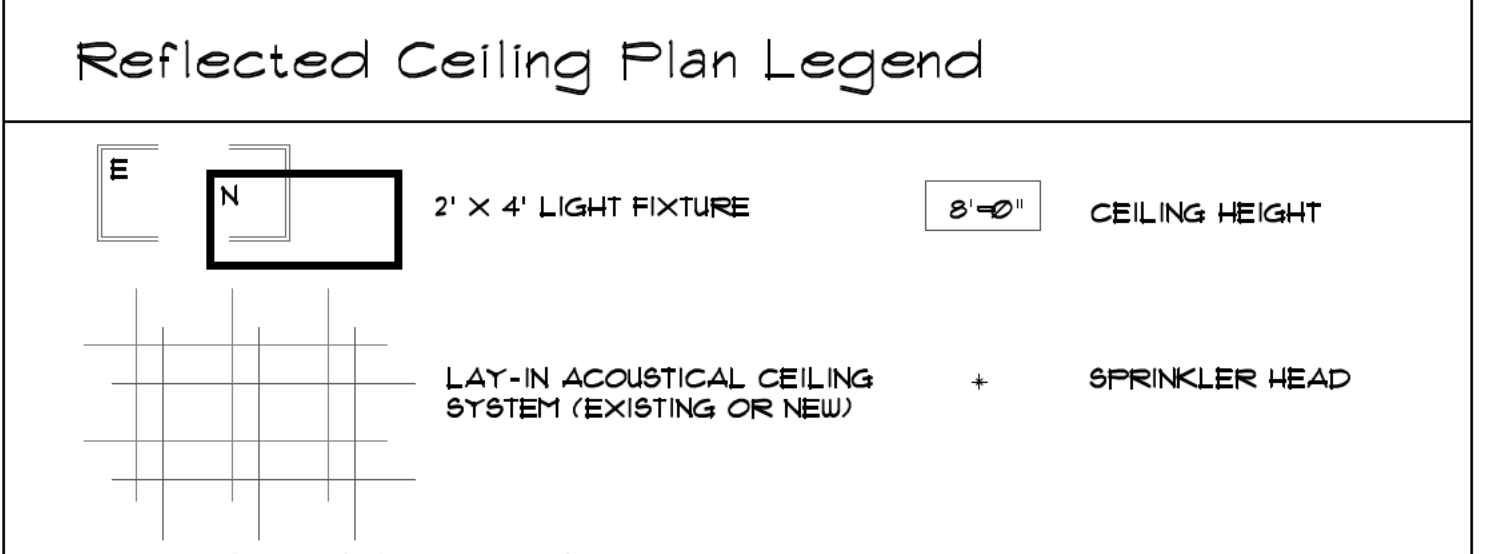


3 REFLECTED CEILING PLAN B-1
SCALE: 1/4"=1'-0"

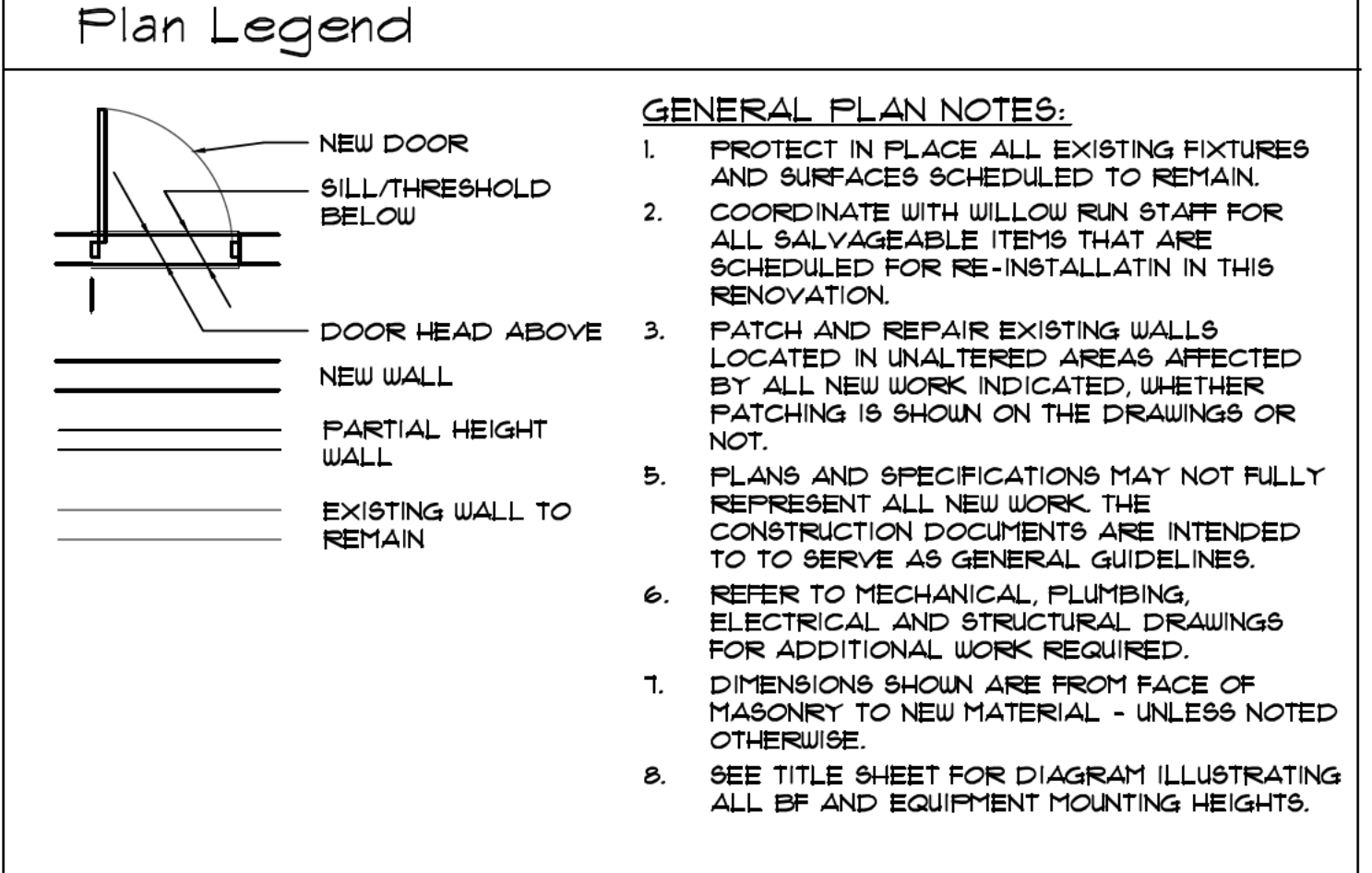
- DIVISION 8 -**
1. PROVIDE 18 GA. HOLLOW METAL FRAMES FOR ALL NEW DOOR OPENINGS. COORDINATE WITH EXISTING WALLS FOR FRAME DEPTH AND INSTALLATION LOCATION FOR RENOVATIONS FRAMES.
 2. PROVIDE AND INSTALL 1-3/4" SOLID-CORE WOOD DOORS WITH AN OAK VENEER FACE, STAINED TO MATCH EXISTING DOORS.
 3. PROVIDE THE FOLLOWING HARDWARE/LOCKS FOR THE (2) DIFFERENT HARDWARE SETS REQUIRED - SET #1 AT CORRIDOR DOORS; SET #2 AT CLASSROOM/TOILETROOM DOORS. COORDINATE WITH HARDWARE SUPPLIER FOR FINAL SELECTIONS.
 - A. PROVIDE SCHLAGE 150000 MORTISE LOCKSETS WHERE NOTED BELOW. THIS IS THE ASSUMED MANUFACTURER TO MATCH THE EXISTING INSTALLATIONS. CONTRACTOR SHALL VERIFY IN FIELD BEFORE SUBMITTING SHOPS.
 - B. PROVIDE BEST CORES FOR ALL LOCKS.
 - C. PROVIDE WITH A US260 FINISH. VERIFY FINISH TO MATCH EXISTING HARDWARE.
 - SET #1 - FOR CORRIDOR DOORS INTO TOILETROOMS
 - I. EXISTING HINGES ARE PLANNED TO REMAIN. IF DAMAGED/RUSTED (VERIFY IN FIELD) - PROVIDE 1-1/2" PAIRS OF 4-1/2" BALL-BEARING HINGES - SATIN STAINLESS STEEL FINISH TO RT WITH EXISTING DOOR PANELS.
 - II. PROVIDE A LEVER HANDLE SIMILAR TO SCHLAGE STANDARD B.F. 03 SERIES - OR EQUAL TO MATCH EXISTING INSTALLATIONS.
 - III. PROVIDE A DOUBLE-CYLINDER NON-DEADENCT FUNCTION LOCKSET WITH KEYS BOTH SIDES TO REPLACE THE EXISTING MORTISE LOCKSET. LOCKSET SHALL ACT AS SIMILAR TO "CLASSROOM SECURITY" LOCK (ANSI F32). COORDINATE NEW LOCKSET/HARDWARE WITH OWNER/ARCHITECT AND WITH ORIGINAL INSTALLATION TO CONFIRM EASE IN INSTALLATION OF REPLACEMENT LOCKSET.
 - SET #2 - FOR DOORS BETWEEN CLASSROOM AND TOILETROOM
 - I. PROVIDE 1-1/2" PAIRS OF 4-1/2" BALL-BEARING HINGES - SATIN STAINLESS STEEL.
 - II. PROVIDE PUSH-PULL PLATES SIMILAR TO ROCKWOOD 110 X 109.
 - III. PROVIDE A LCN CLOSER SIMILAR TO 4090T, INSIDE FRAME-MOUNT WITH HOLD-OPEN.
 - IV. PROVIDE A 10"14 X 32" W KICKPLATE FOR THE PUSH SIDE OF THE DOOR.
 - PROVIDE A TRANSLUCENT, VINYL FILM TO BE APPLIED TO ALL GLAZING IN LITES AND SILETES FOR EXISTING DOOR INSTALLATIONS TO CORRIDOR. SIMILAR TO 3M CONTROLGLAZ, WHITE FROSTED PRIVACY WINDOW VINYL.

- DIVISION 9 -**
1. ALL GYPSUM BOARD SHALL BE 5/8" TAPERED BOARD, BY USG OR SIMILAR.
 2. METAL STUDS SHALL BE 25 GA. MN. IN 3-1/2", 4" AND/OR 6" DEPTHS AS REQUIRED, @ 16" O/C SPACING FOR ALL VERTICAL PARTITIONS AND CHASES.
 3. PROVIDE HAT-CHANNELS, TRACK, HISC CHANNELS AND OTHER ACCESSORIES AS NEEDED, AND METAL TRIMS FOR CORNERS.
 4. PROVIDE NON-COMB WOOD OR 16GA SHEET METAL FOR ALL BLOCKING TO SUPPORT WALL-HUNG AND/OR ATTACHED EQUIPMENT.
 5. CEILING SYSTEM SHALL BE USG 210 (RADAR) IN 24" X 24" X 5/8" SIZE WITH A STANDARD 1/8" WHITE SUSPENSION GRID. SECURE CEILING SYSTEM GRID, AND ALL LIGHT FIXTURES SEPARATELY, TO DECK ABOVE. COORDINATE WITH EX. TILE IN BUILDING FOR EXACT STYLE/TEXTURE/COLOR.
 6. PROVIDE AND INSTALL ARMSTRONG STANDARD EXCELON, IMPERIAL TEXTURE VINYL COMPOSITION FLOOR TILE TO MATCH COLORS AND PATTERNS IN THE LOBBIES.
 - A. TOILETROOM VCT SHALL BE A SINGLE COLOR THROUGHOUT THE ROOM FROM MANUFACTURER'S STANDARD SELECTIONS.
 - B. PROVIDE AND INSTALL A VINYL TRANSITION STRIP BETWEEN DISSIMILAR MATERIAL SIM. TO ARMSTRONG VTI.
 - C. PROVIDE AND INSTALL A 4" COVED BASE (BLACK) WHERE REQUIRED.
 7. ALL EXPOSED SURFACES WITHIN THE TOILETROOMS SHALL BE PAINTED WITH A SCUFF-RESISTANT, ACRYLIC-LATEX PAINT.
 - A. ALL EXISTING WALLS SHALL BE TOILETTED AND/OR PRIMED, AS REQUIRED, BEFORE FINISH PAINTING.
 - B. PAINT FOR WALLS SHALL BE SHERWIN-WILLIAMS EMERALD INTERIOR ACRYLIC LATEX OR EQUAL.
 - C. PAINT FOR TRIM SHALL BE SHERWIN-WILLIAMS EMERALD URETHANE TRIM ENAMEL OR EQUAL.
 8. ALL PAINTING OF ADJACENT AREAS AS PART OF CUTTING-AND-PATCHING SHALL MATCH ADJACENT COLORS AND SHEENS TO AN END-POINT OF THE WALL OR NATURAL TRANSITION AT WHICH TO TERMINATE THE NEW PAINT.

- DIVISION 10 -**
1. PROVIDE A NYLON CEILING-HUNG CURTAIN WITH AN ALUMINUM, SURFACE-MOUNTED TRACK #4892N - SIMILAR TO OS CUBICLE CURTAINS FROM THE C-9 GROUP.
 - A. PROVIDE NYLON BREAKAWAY CARRIERS WITH NYLON WHEELS.
 - B. THE CURTAIN SHALL BE SOLID BELOW 6' AFF AND AN OPEN-MESH ABOVE 6' AFF TO TRACK ABOVE. THE CURTAIN SHALL HANG 12" FROM THE FLOOR.
 - C. THE CURTAIN SHALL BREAKAWAY WITH A 25# LOAD APPLIED.
 2. PROVIDE AND INSTALL THESE BOBRICK PRODUCTS IN EACH TOILETROOM, EXCEPT AS NOTED BELOW.
 - A. PAPER TOWEL DISPENSER - B-262
 - B. MIRROR - B-165 24" X 36"
 - C. SHELF AT SINK - B-234 X 24"
 - D. SOAP DISPENSER - B-2111
 - E. TOILET PAPER DISPENSER - BRADLEY, JUMBO-DUAL-ROLL #5425. CONFIRM WITH USG.
 - F. GRAB BARS - B-6806, SATIN IN LENGTHS REQUIRED.
 - G. ADJUSTABLE GRAB BARS - B-4938, SWING-UP GRAB BAR.
 - H. TOILET PARTITIONS BY DECKER AT SCHOOLFX.COM - AS REQUIRED. COORDINATE WITH LANDLORD/ARCHITECT TO MATCH EXISTING.



- GENERAL CEILING NOTES:**
1. REFER TO MECHANICAL, PLUMBING AND ELECTRICAL DRAWINGS FOR ADDITIONAL AREAS OF WORK.
 2. REVIEW DISPOSITION OF ALL ITEMS TO BE REMOVED BUT NOT REINSTALLED WITH OWNER.
 3. REMOVE EXISTING FIXTURES AND ELECTRICAL DEVICES AND REINSTALL AS NEEDED WHERE CEILING MOUNTED OR IN REVISION WITH NEW CEILING.



- GENERAL PLAN NOTES:**
1. PROTECT IN PLACE ALL EXISTING FIXTURES AND SURFACES SCHEDULED TO REMAIN.
 2. COORDINATE WITH WILLOW RUN STAFF FOR ALL SALVAGEABLE ITEMS THAT ARE SCHEDULED FOR RE-INSTALLATION IN THIS RENOVATION.
 3. PATCH AND REPAIR EXISTING WALLS LOCATED IN UNALTERED AREAS AFFECTED BY ALL NEW WORK INDICATED, WHETHER PATCHING IS SHOWN ON THE DRAWINGS OR NOT.
 5. PLANS AND SPECIFICATIONS MAY NOT FULLY REPRESENT ALL NEW WORK. THE CONSTRUCTION DOCUMENTS ARE INTENDED TO SERVE AS GENERAL GUIDELINES.
 6. REFER TO MECHANICAL, PLUMBING, ELECTRICAL AND STRUCTURAL DRAWINGS FOR ADDITIONAL WORK REQUIRED.
 7. DIMENSIONS SHOWN ARE FROM FACE OF MASONRY TO NEW MATERIAL - UNLESS NOTED OTHERWISE.
 8. SEE TITLE SHEET FOR DIAGRAM ILLUSTRATING ALL BF AND EQUIPMENT MOUNTING HEIGHTS.

APPROX. AREA OF FLOOR CUT
PATCH w/ 4" MIN. P. CONCRETE ON 10-MIL VAPOR-BARRIER ON COMPACTED GRAVEL BED IN AREA OF SANITARY CONNECTIONS. INSTALL 3/8" x 12" DOUELS AT 48" O/C TO TIE SLABS TOGETHER. INSTALL NEW VCT FLOORING TO MATCH EXISTING PATTERN.

INSTALL NEW DOOR HARDWARE IN EX. DOOR AND A NEW TRANSITION.

INSTALL A PAPER TOWEL DISPENSER SUPPLIED BY WR.

INSTALL A 4"x24" STAINLESS STEEL SHELF AND 20"W X 36"H MIRROR @ 40" AFF

PROVIDE AND INSTALL A SOAP DISPENSER

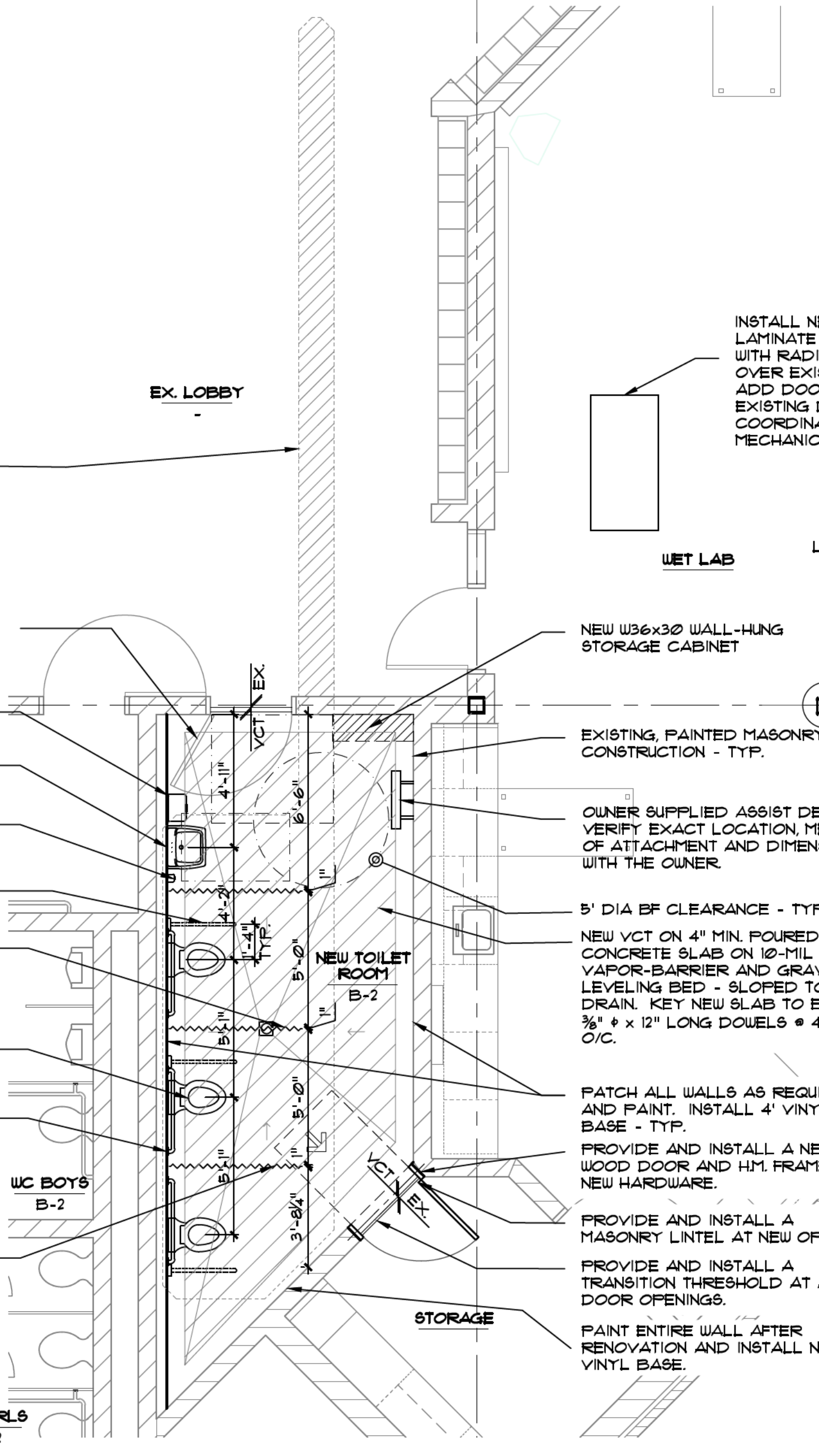
PROVIDE AND INSTALL A SWING-UP B.F. GRAB BAR ANCHORED TO WITHSTAND A 300# LATERAL LOAD.

CEILING-HUNG TRACK FOR 5' LONG PRIVACY CURTAIN.

FLOOR-MOUNTED TOILETS WITH FIXED GRAB BAR BEHIND AND SWING-UP BAR ADJACENT.

NEW PARTITIONS - 3/8" GYP. BOARD ON 4" METAL STUDS AT 16" O/C TO 6" MIN. ABOVE CEILING PLANE - TYP.

CEILING-HUNG TRACK FOR 5' LONG PRIVACY CURTAIN.



2 FLOOR PLAN TOILET ROOM B-2
SCALE: 1/4"=1'-0"

INSTALL NEW PLASTIC LAMINATE COUNTER TOP WITH RADIUS CORNERS OVER EXISTING CABINET. ADD DOOR LOCKS TO EXISTING DOORS. COORDINATE WITH MECHANICAL WORK.

NEW VCT ON 4" MIN. POURED CONCRETE SLAB ON 10-MIL VAPOR-BARRIER AND GRAVEL LEVELING BED - SLOPED TO DRAIN. KEY NEW SLAB TO EX. w/ 3/8" x 12" LONG DOUELS @ 48" O/C.

FLOOR-MOUNTED TOILETS WITH FIXED GRAB BAR BEHIND AND SWING-UP BAR ADJACENT.

PROVIDE AND INSTALL A NEW WOOD DOOR AND H.M. FRAME WITH NEW HARDWARE.

PROVIDE AND INSTALL A MASONRY LINTEL AT NEW OPENING.

PROVIDE AND INSTALL A TRANSITION THRESHOLD AT ALL DOOR OPENINGS.

CEILING-HUNG TRACK FOR 5' LONG PRIVACY CURTAIN.

NEW VCT ON 4" MIN. POURED CONCRETE SLAB ON 10-MIL VAPOR-BARRIER AND GRAVEL LEVELING BED - SLOPED TO DRAIN. KEY NEW SLAB TO EX. w/ 3/8" x 12" LONG DOUELS @ 48" O/C.

PATCH ALL WALLS AS REQUIRED AND PAINT. INSTALL 4" VINYL BASE - TYP.

PROVIDE AND INSTALL A NEW WOOD DOOR AND H.M. FRAME WITH NEW HARDWARE.

PROVIDE AND INSTALL A MASONRY LINTEL AT NEW OPENING.

PROVIDE AND INSTALL A TRANSITION THRESHOLD AT ALL DOOR OPENINGS.

PAINT ENTIRE WALL AFTER RENOVATION AND INSTALL NEW VINYL BASE.

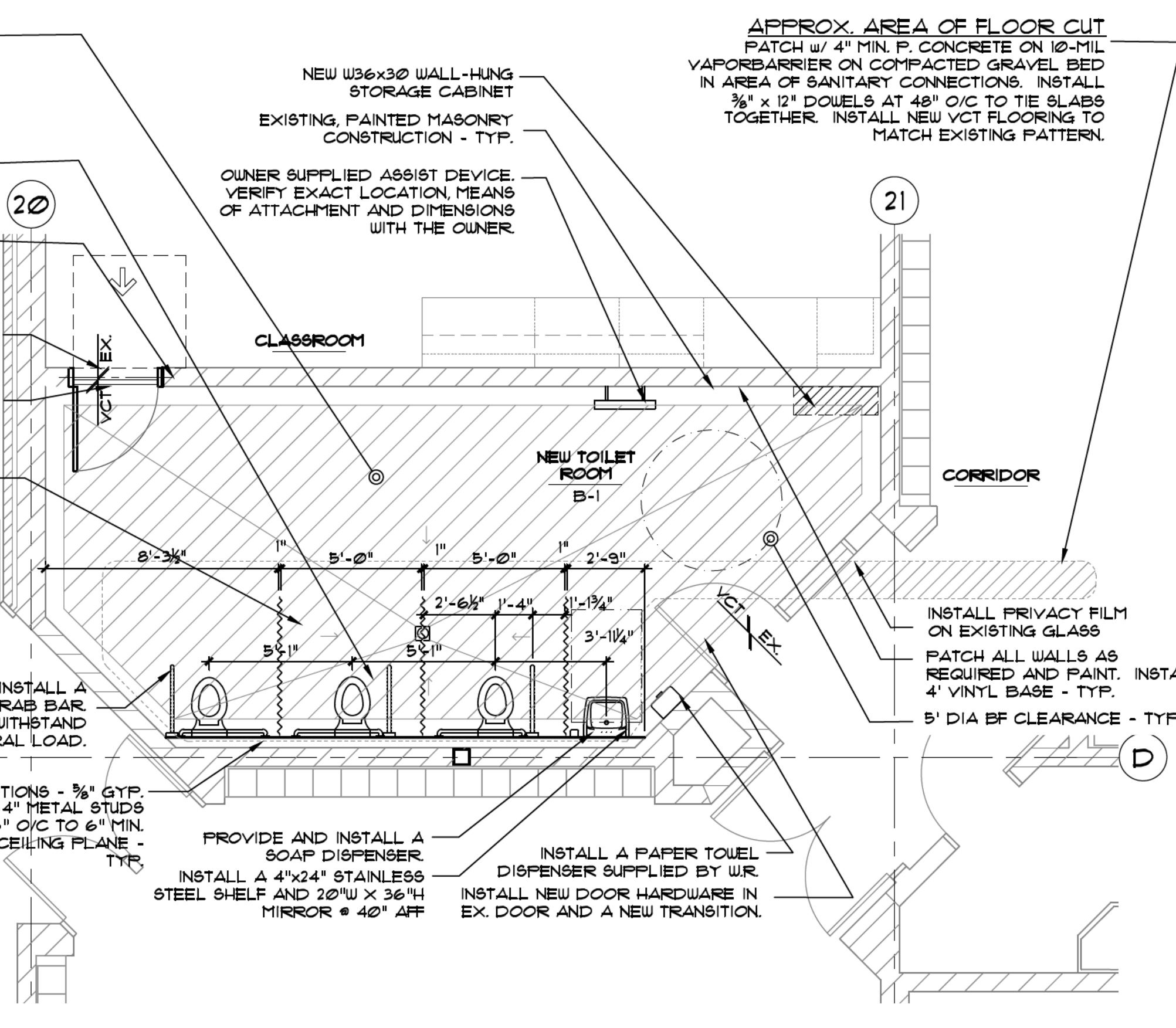
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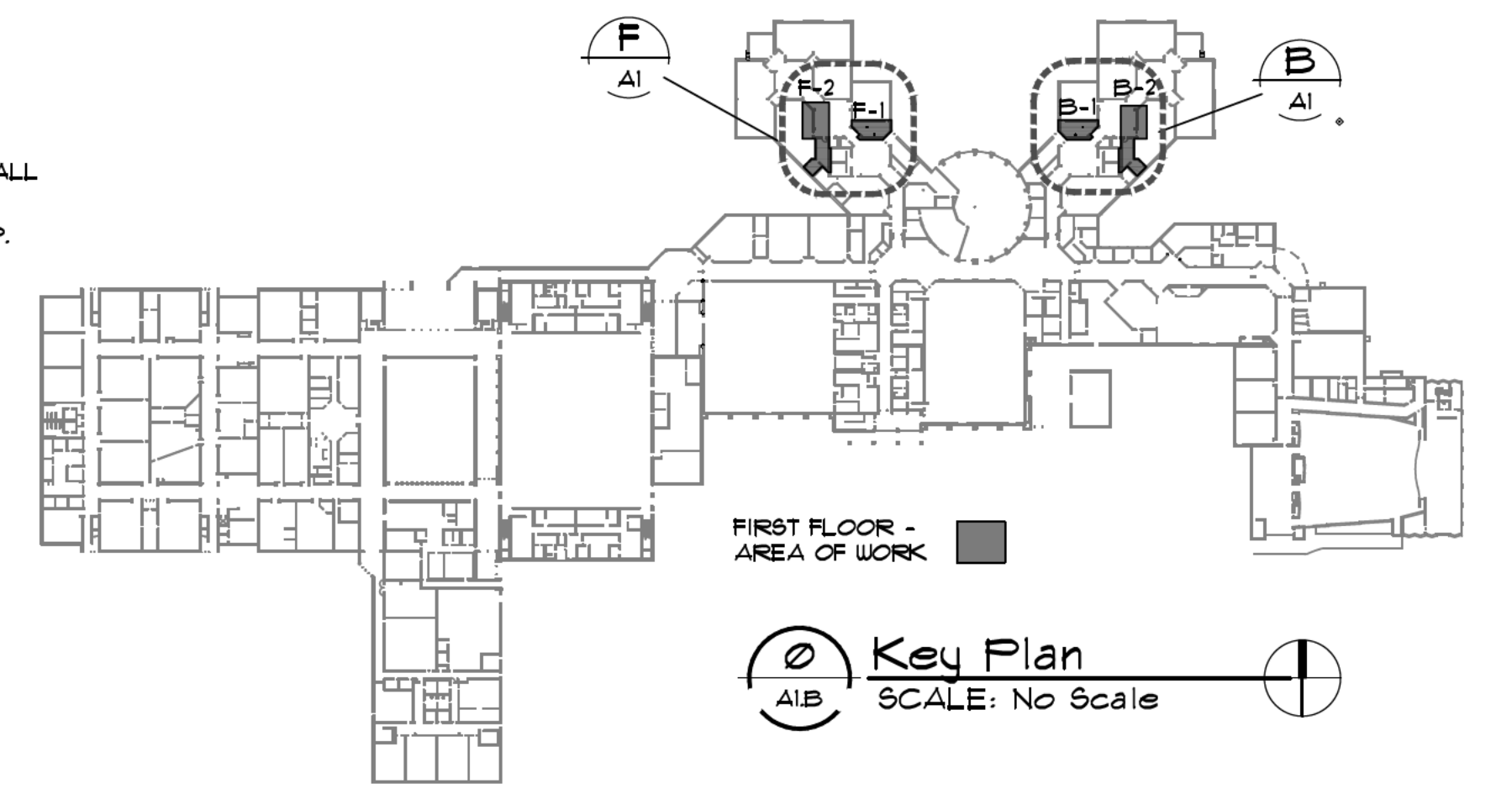
INSTALL A 4"x24" STAINLESS STEEL SHELF AND 20"W X 36"H MIRROR @ 40" AFF

INSTALL A PAPER TOWEL DISPENSER SUPPLIED BY WR.

INSTALL NEW DOOR HARDWARE IN EX. DOOR AND A NEW TRANSITION.



1 FLOOR PLAN TOILET ROOM B-1
SCALE: 1/4"=1'-0"



Key Plan
SCALE: No Scale

Mitchell and Mouat Architects
235 Spencer Ln.
Ypsilanti MI 48198

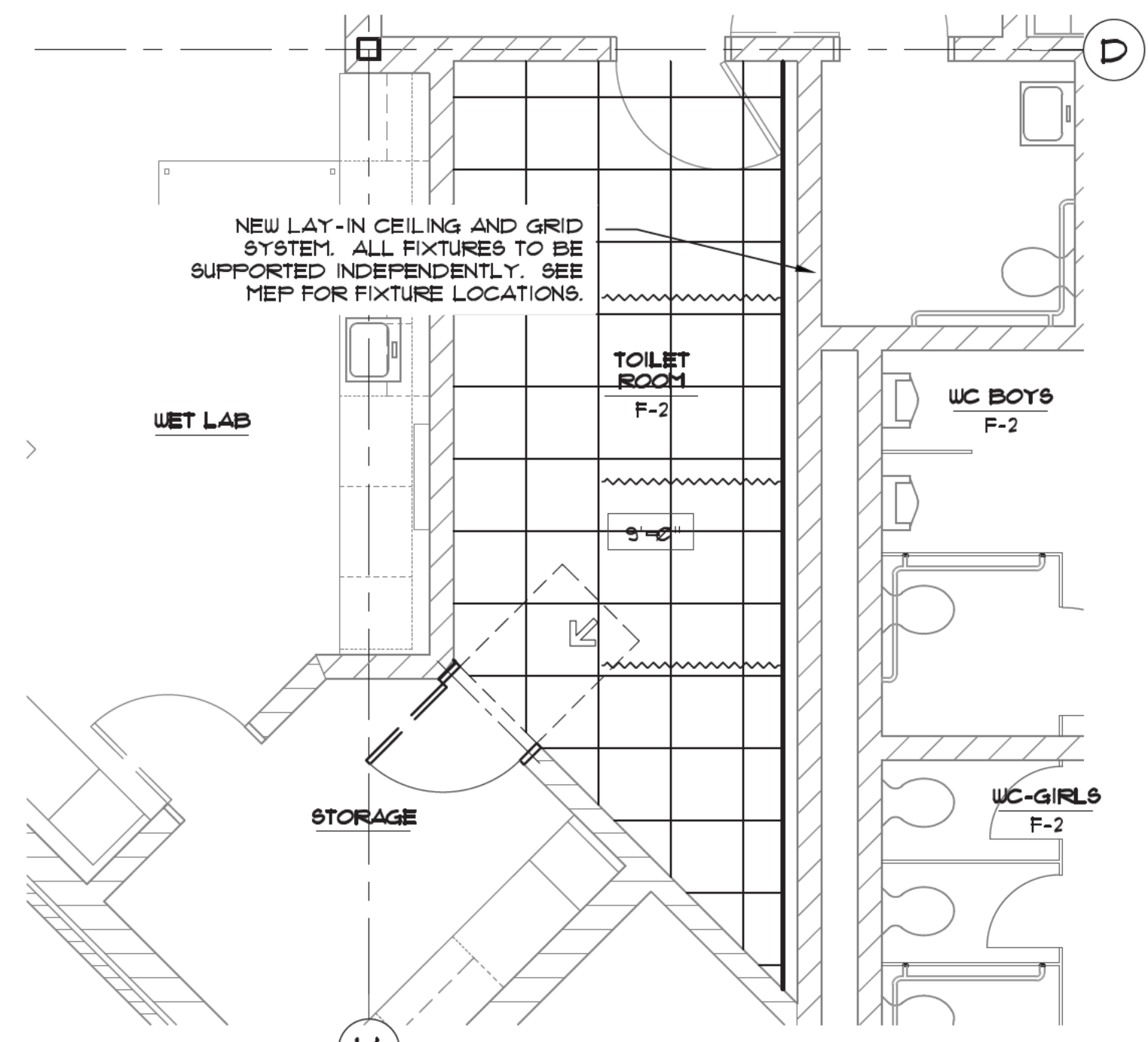
Willow Run Middle School
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Project Number: 1916

Fir. and Ref. Ctg Plans
Specs / Wing B

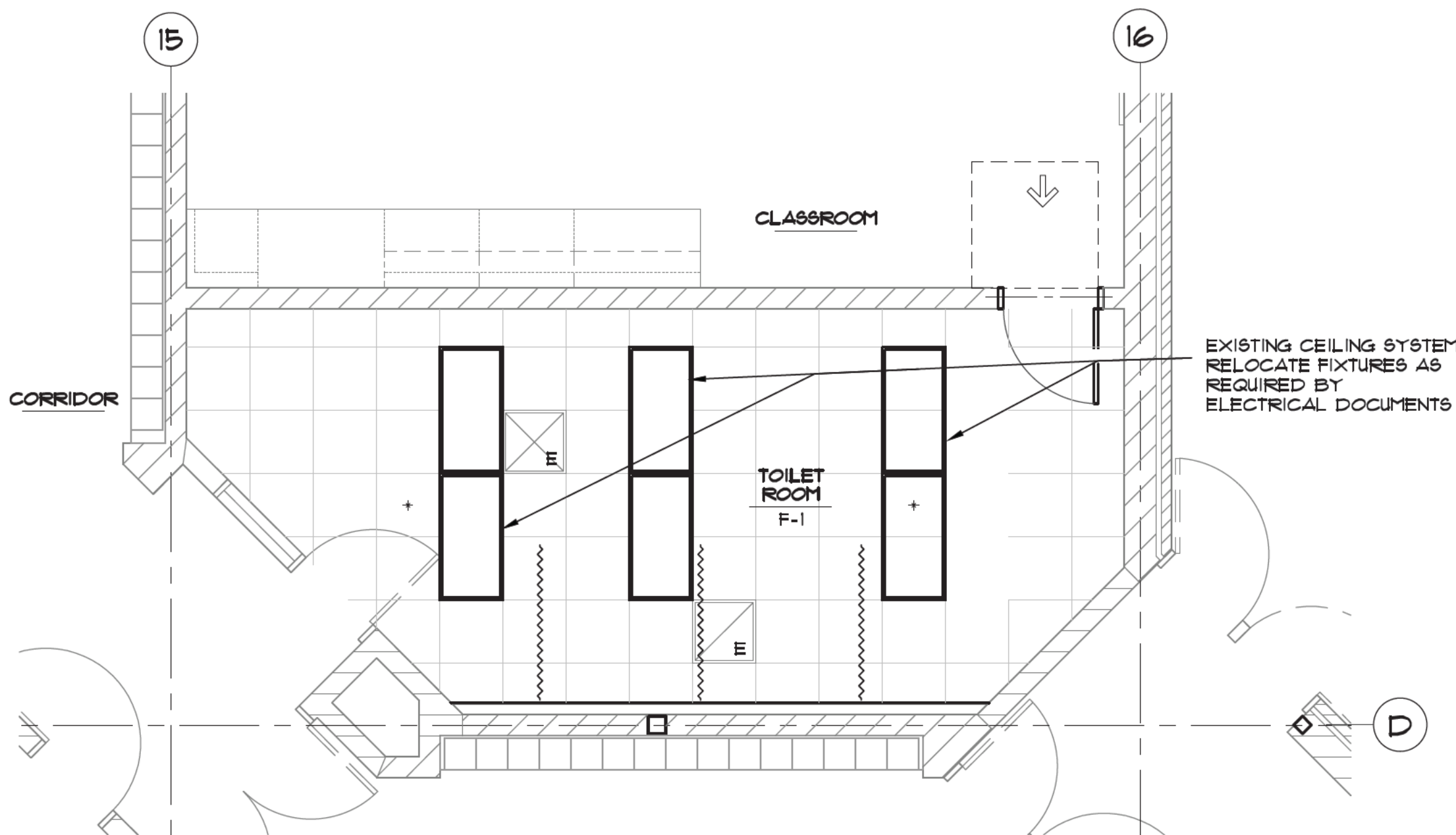
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Date: 8-26-19

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4 REFLECTED CEILING PLAN F-2
SCALE: 1/4"=1'-0"



3 REFLECTED CEILING PLAN F-1
SCALE: 1/4"=1'-0"

Reflected Ceiling Plan Legend

2' x 4' LIGHT FIXTURE 8'-0" CEILING HEIGHT
 LAY-IN ACOUSTICAL CEILING SYSTEM (EXISTING OR NEW) SPRINKLER HEAD

GENERAL CEILING NOTES:

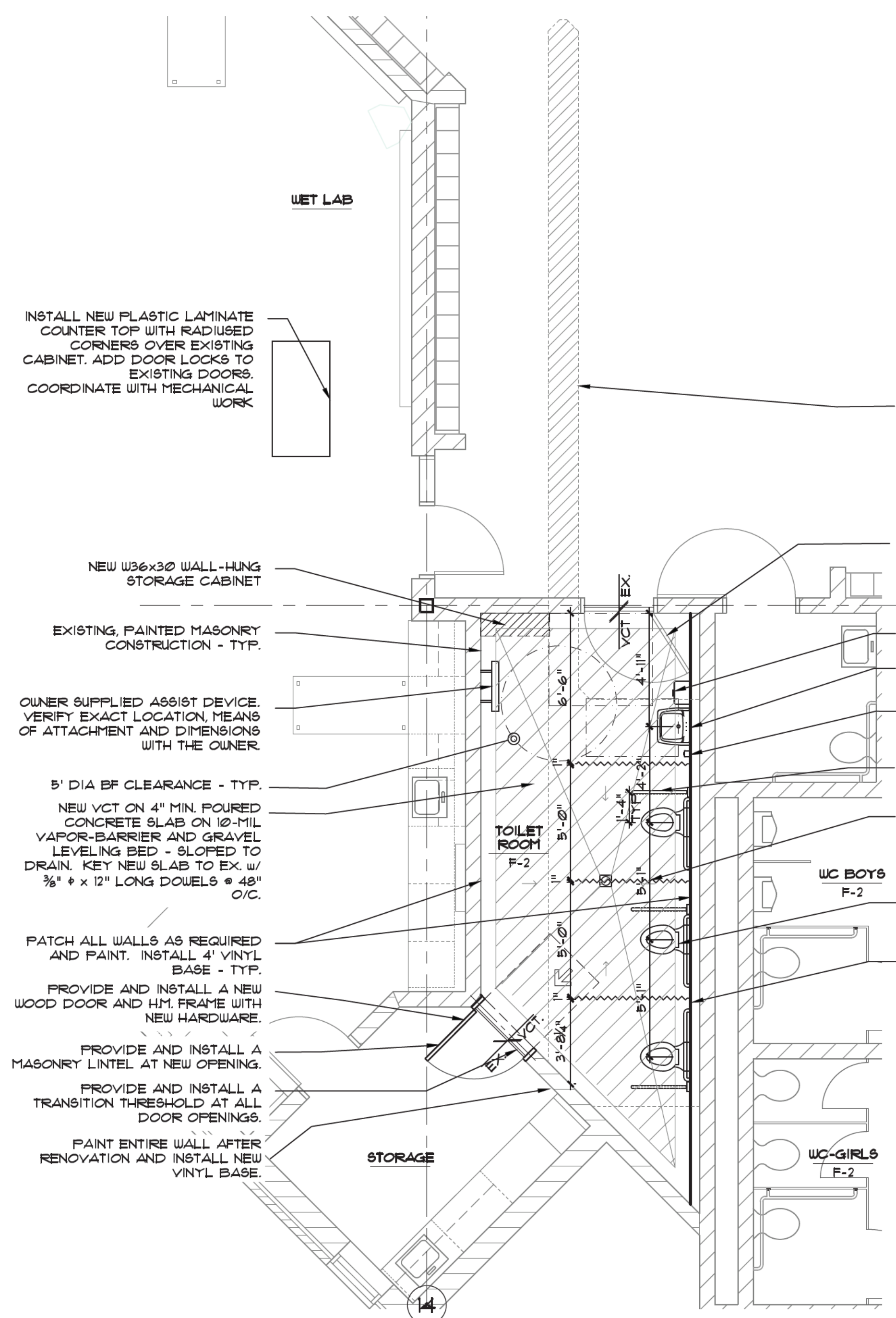
- REFER TO MECHANICAL, PLUMBING AND ELECTRICAL DRAWINGS FOR ADDITIONAL AREAS OF WORK.
- REVIEW DISPOSITION OF ALL ITEMS TO BE REMOVED BUT NOT REINSTALLED WITH OWNER.
- REMOVE EXISTING FIXTURES AND ELECTRICAL DEVICES AND REINSTALL AS NEEDED WHERE CEILING MOUNTED OR IN INTERFERENCE WITH NEW CEILING.

Plan Legend

NEW DOOR
 SILL/THRESHOLD BELOW
 DOOR HEAD ABOVE
 NEW WALL
 PARTIAL HEIGHT WALL
 EXISTING WALL TO REMAIN

GENERAL PLAN NOTES:

- PROTECT IN PLACE ALL EXISTING FIXTURES AND SURFACES SCHEDULED TO REMAIN.
- COORDINATE WITH WILLOW RUN STAFF FOR ALL SALVAGEABLE ITEMS THAT ARE SCHEDULED FOR RE-INSTALLATION IN THIS RENOVATION.
- PATCH AND REPAIR EXISTING WALLS LOCATED IN UNALTERED AREAS AFFECTED BY ALL NEW WORK INDICATED. WHETHER PATCHING IS SHOWN ON THE DRAWINGS OR NOT.
- PLANS AND SPECIFICATIONS MAY NOT FULLY REPRESENT ALL NEW WORK. THE CONSTRUCTION DOCUMENTS ARE INTENDED TO TO SERVE AS GENERAL GUIDELINES.
- REFER TO MECHANICAL, PLUMBING, ELECTRICAL AND STRUCTURAL DRAWINGS FOR ADDITIONAL WORK REQUIRED.
- DIMENSIONS SHOWN ARE FROM FACE OF MASONRY TO NEW MATERIAL - UNLESS NOTED OTHERWISE.
- SEE TITLE SHEET FOR DIAGRAM ILLUSTRATING ALL BF AND EQUIPMENT MOUNTING HEIGHTS.



2 FLOOR PLAN TOILET ROOM F-2
SCALE: 1/4"=1'-0"

APPROX. AREA OF FLOOR CUT
PATCH w/ 4" MIN. P. CONCRETE ON 10-MIL VAPOR BARRIER ON COMPACTED GRAVEL BED IN AREA OF SANITARY CONNECTIONS. INSTALL 3/8" x 12" DOUELS AT 48" O/C TO TIE SLABS TOGETHER. INSTALL NEW VCT FLOORING TO MATCH EXISTING PATTERN.

INSTALL NEW DOOR HARDWARE IN EX. DOOR AND A NEW TRANSITION.

INSTALL A PAPER TOWEL DISPENSER SUPPLIED BY WR.
INSTALL A 4"x24" STAINLESS STEEL SHELF AND 20"W x 36"H MIRROR @ 40" AFF.
PROVIDE AND INSTALL A SOAP DISPENSER.

PROVIDE AND INSTALL A SWING-UP, BF. GRAB BAR ANCHORED TO WITHSTAND A 300# LATERAL LOAD.
CEILING-HUNG TRACK FOR 5' LONG PRIVACY CURTAIN.

FLOOR-MOUNTED TOILETS WITH FIXED GRAB BAR BEHIND AND SWING-UP BAR ADJACENT.

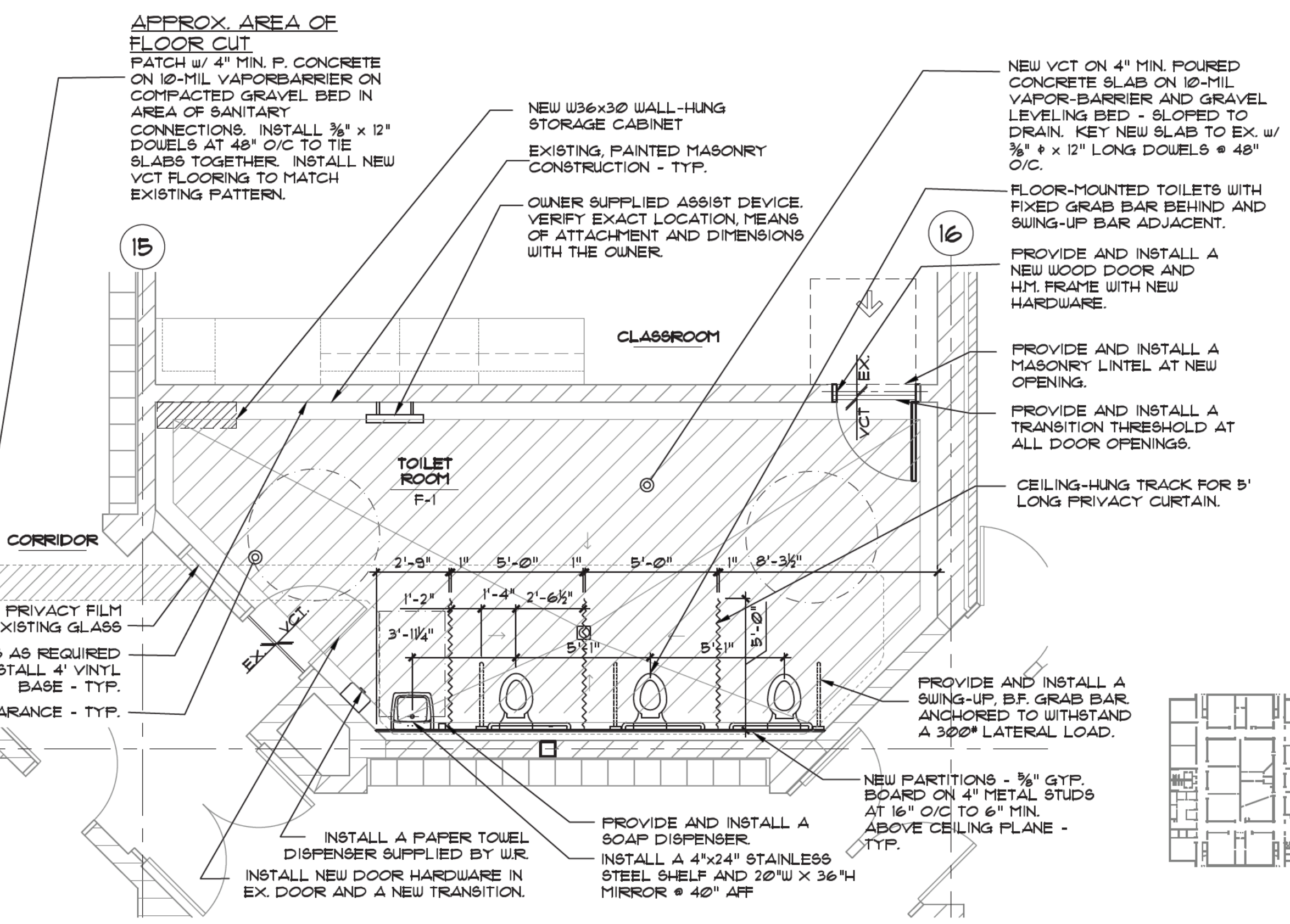
NEW PARTITIONS - 3/8" GYP. BOARD ON 4" METAL STUDS AT 16" O/C TO 6" MIN. ABOVE CEILING PLANE - TYP.

INSTALL PRIVACY FILM ON EXISTING GLASS

PATCH ALL WALLS AS REQUIRED AND PAINT. INSTALL 4" VINYL BASE - TYP.
5' DIA BF CLEARANCE - TYP.

INSTALL A PAPER TOWEL DISPENSER SUPPLIED BY WR.
INSTALL NEW DOOR HARDWARE IN EX. DOOR AND A NEW TRANSITION.

PROVIDE AND INSTALL A SOAP DISPENSER.
INSTALL A 4"x24" STAINLESS STEEL SHELF AND 20"W x 36"H MIRROR @ 40" AFF.



1 FLOOR PLAN TOILET ROOM F-1
SCALE: 1/4"=1'-0"

APPROX. AREA OF FLOOR CUT
PATCH w/ 4" MIN. P. CONCRETE ON 10-MIL VAPOR BARRIER ON COMPACTED GRAVEL BED IN AREA OF SANITARY CONNECTIONS. INSTALL 3/8" x 12" DOUELS AT 48" O/C TO TIE SLABS TOGETHER. INSTALL NEW VCT FLOORING TO MATCH EXISTING PATTERN.

NEW 3/8"x30" WALL-HUNG STORAGE CABINET
EXISTING, PAINTED MASONRY CONSTRUCTION - TYP.

NEW VCT ON 4" MIN. POURED CONCRETE SLAB ON 10-MIL VAPOR-BARRIER AND GRAVEL LEVELING BED - SLOPED TO DRAIN. KEY NEW SLAB TO EX. w/ 3/8" x 12" LONG DOUELS @ 48" O/C.

FLOOR-MOUNTED TOILETS WITH FIXED GRAB BAR BEHIND AND SWING-UP BAR ADJACENT.

PROVIDE AND INSTALL A NEW WOOD DOOR AND HM. FRAME WITH NEW HARDWARE.

PROVIDE AND INSTALL A MASONRY LINTEL AT NEW OPENING.

PROVIDE AND INSTALL A TRANSITION THRESHOLD AT ALL DOOR OPENINGS.

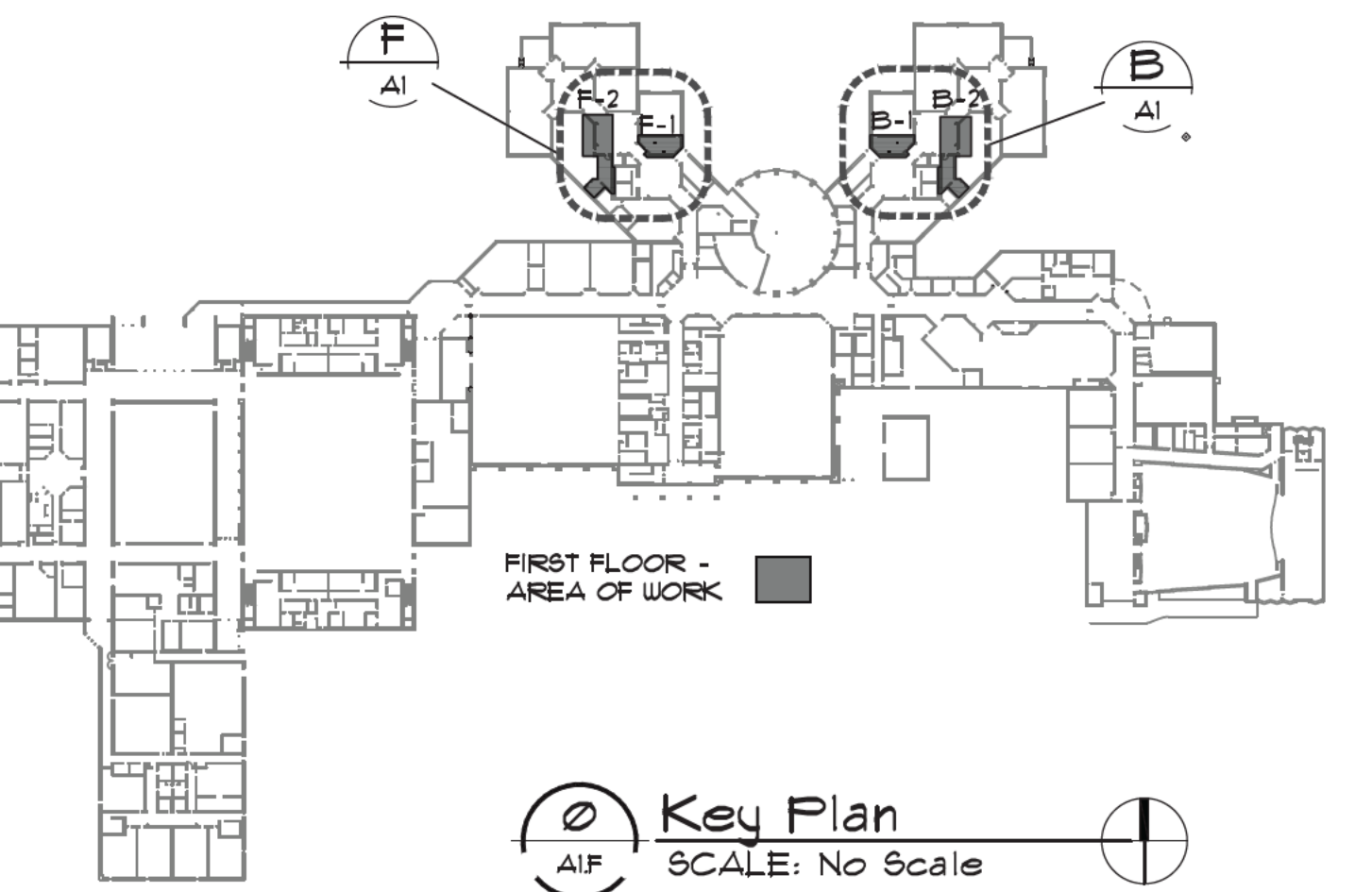
CEILING-HUNG TRACK FOR 5' LONG PRIVACY CURTAIN.

PROVIDE AND INSTALL A SWING-UP BF. GRAB BAR ANCHORED TO WITHSTAND A 300# LATERAL LOAD.

NEW PARTITIONS - 3/8" GYP. BOARD ON 4" METAL STUDS AT 16" O/C TO 6" MIN. ABOVE CEILING PLANE - TYP.

INSTALL A PAPER TOWEL DISPENSER SUPPLIED BY WR.
INSTALL NEW DOOR HARDWARE IN EX. DOOR AND A NEW TRANSITION.

PROVIDE AND INSTALL A SOAP DISPENSER.
INSTALL A 4"x24" STAINLESS STEEL SHELF AND 20"W x 36"H MIRROR @ 40" AFF.



Key Plan
SCALE: No Scale

MECHANICAL ABBREVIATION LIST

ABBREVIATION	DESCRIPTION	ABBREVIATION	DESCRIPTION	ABBREVIATION	DESCRIPTION
A	COMPRESSED AIR	FD	FLOOR DRAIN	PAKU	PACKAGED AIR CONDITIONING UNIT
A(L-#)	COMPRESSED AIR (SPECIFIC PSIG)	FFD	FUNNEL FLOOR DRAIN	PBD	PARALLEL BLADE DAMPER
AAV	AUTOMATIC AIR VENT	FH	FIRE HYDRANT	PC	PUMPED CONDENSATE
ACC	AIR COOLED CONDENSER	FHC	FIRE HOSE CABINET	PCW	PROCESS COOLING WATER
ACCU	AIR COOLED CONDENSING UNIT	FHR	FIRE HOSE RACK	PCWR	PROCESS COOLING WATER RETURN
AD	ACCESS DOOR	FHV	FIRE HOSE VALVE	PCWS	PROCESS COOLING WATER SUPPLY
AD	AREA DRAIN	FLA	FULL LOAD AMPS	PD	PRESSURE DROP (FEET OF WATER)
AE	AIR EXTRACTOR	FLR	FLOOR	PH	PERIMETER HEAT
AFT	ABOVE FINISHED FLOOR	FLM	FLOW METER	PHR	PERIMETER HEAT RETURN
AHU	AIR HANDLING UNIT	FMS	FLOW MEASURING STATION	PHS	PERIMETER HEAT SUPPLY
ALT	ALTERNATE	FPM	FEET PER MINUTE	PNL	PANEL
AMP	AMPERE	FP	FIRE PUMP	PNM	PARTS PER MILLION
APD	AIR PRESSURE DROP	FTPU	FAN POWERED (AIR) TERMINAL UNIT	PS	POUNDS PER SQUARE INCH
AR	ARGON	FS	FLOOR SINK	PSIA	POUNDS PER SQUARE INCH - ABSOLUTE
ASHRAE	AMERICAN SOCIETY OF HEATING, REFRIGERATION AND AIR-CONDITIONING ENGINEERS	FSEC	FOOD SERVICE EQUIPMENT CONTRACTOR	PSIG	POUNDS PER SQUARE INCH - GAUGE
ASR	AUTOMATIC SPRINKLER RISER	FT	FEET	PW	PURIFIED WATER
AUX	AUXILIARY	FTR	FINNED TUBE RADIATION	PWR	PURIFIED WATER RETURN
AV	ACID VENT	FV	FACE VELOCITY	PWS	PURIFIED WATER SUPPLY
AVTR	ACID VENT THROUGH ROOF	G	NATURAL GAS		
AW	ACID WASTE	GA	GAUGE		
		GAL	GALLON		
BAS	BUILDING AUTOMATION SYSTEM	GRH	GRAVITY RELIEF HOOD		
BCU	BLOWER COIL UNIT	GPH	GALLONS PER HOUR		
BDD	BACKDRAFT DAMPER	GPM	GALLONS PER MINUTE		
BFF	BELOW FINISHED FLOOR	GSAN	GREASE SANITARY WASTE		
BFP	BACKFLOW PREVENTER				
BHP	BRAKE HORSEPOWER	H	HYDROGEN		
BOD	BOTTOM OF DUCT	HB	HOSE BIBB		
BOP	BOTTOM OF PIPE	HC	HEATING COIL		
BTU	BRITISH THERMAL UNIT	HD	HOT DECK		
BTUH	BRITISH THERMAL UNIT PER HOUR	HEPA	HIGH EFFICIENCY PARTICULATE ARRESTANCE		
BVC	BEVERAGE CONDUIT	HL	HIGH LIMIT		
BWV	BACKWATER VALVE	HGA	HAND/OFF/AUTO		
		HP	HEAT PUMP		
C	COMMON	HP	HORSEPOWER		
CAP	CAPACITY	HPCW	HIGH PRESSURE DOMESTIC COLD WATER		
CAV	CONSTANT AIR VOLUME	HPHW	HIGH PRESSURE DOMESTIC HOT WATER		
CB	CATCH BASIN	HPHWR	HIGH PRESSURE DOMESTIC HOT WATER RETURN		
CC	COOLING COIL	HPL	HEAT PUMP LOOP		
CD	COLD DECK	HPLR	HEAT PUMP LOOP RETURN		
CD	CONDENSATE DRAIN	HPLS	HEAT PUMP LOOP SUPPLY		
CFI	CONTRACTOR FURNISHED, CONTRACTOR INSTALLED	HR	HOUR		
CFH	CUBIC FEET PER HOUR	HTG	HEATING		
CFM	CUBIC FEET PER MINUTE	HV	HEATING VENTILATING		
CH	CHILLER	HVAC	HEATING, VENTILATING, AIR CONDITIONING		
CHW	CHILLED WATER	HWH	HOT WATER HEATING		
CHWR	CHILLED WATER RETURN	HWHR	HOT WATER HEATING RETURN		
CHWS	CHILLED WATER SUPPLY	HWS	HOT WATER HEATING SUPPLY		
CLD	COOLING	HW	DOMESTIC HOT WATER		
CND	CONDENSATE	HW(L-#)	DOMESTIC HOT WATER (SPECIFIC TEMP °F)		
CND	CONDENSATE (SPECIFIC PSIG)	HWR	HEAT EXCHANGER		
CO	CLEAN OUT	HX	HEAT EXCHANGER		
CO2	CARBON DIOXIDE	HZ	HERTZ		
CONT	CONTINUATION OR CONTINUED				
CONTR	CONTRACTOR	IAQ	INDOOR AIR QUALITY		
CONV	CONNECTOR	ID	INSIDE DIAMETER		
COP	COEFFICIENT OF PERFORMANCE	IE	INVERT ELEVATION		
CP	CIRCULATING PUMP	IH	INTAKE HOOD		
CRU	CONDENSATE RETURN UNIT	IN	INCHES		
CSS	CLINICAL SERVICE SINK	IR	INFRARED HEATER		
CUH	COOLING TOWER	IW	INDIRECT WASTE		
CW	CABINET UNIT HEATER	JC	JANITOR'S CLOSET		
CWF	DOMESTIC COLD WATER - FILTERED	JP	JOCKEY PUMP		
CWR	CONDENSER WATER RETURN	KW	KILOWATT		
CWS	CONDENSER WATER SUPPLY	KWH	KILOWATT-HOUR		
		LAT	LEAVING AIR TEMPERATURE		
D&T	DRIP AND TRAP	LAB	LABORATORY		
DA	DISCHARGE AIR	LAV	LAVATORY		
DAT	DISCHARGE AIR TEMPERATURE	LBS	POUNDS		
DB	DRY BULB	LDB	LEAVING DRY BULB		
DDC	DIRECT DIGITAL CONTROL	LL	LOW LIMIT		
DEG	DEGREE	LPC	LOW PRESSURE CONDENSATE		
DFU	DRAINAGE FIXTURE UNITS	LPS	LOW PRESSURE STEAM		
DIA	DIAMETER	LRA	LOCKED ROTOR AMPS		
DMPR	DAMPER	LWB	LEAVING WET BULB		
D/N	DAY/NIGHT	LWT	LEAVING WATER TEMPERATURE		
DN	DOWN	MA	MIXED AIR		
DNZ	DOWNSPOUT NOZZLE	MAT	MIXED AIR TEMPERATURE		
DS	DUCT SILENCER	MAU	MAKE-UP AIR UNIT		
DT	DRAIN TILE	MAX	MAXIMUM		
DTG	DRAIN TILE CONNECTION	MBH	THOUSAND BRITISH THERMAL UNITS PER HOUR		
DWH	DOMESTIC WATER HEATER	MCA	MEDICAL COMPRESSED AIR		
DWG	DRAWING	MCA	MINIMUM CIRCUIT AMPACITY		
		MCC	MOTOR CONTROL CENTER		
(E)	EXISTING	MECH	MECHANICAL		
E	EXHAUST GRILLE OR REGISTER	MEZZ	MEZZANINE		
EA	EACH	MFR	MANUFACTURER		
EA	EXHAUST AIR	MH	MANHOLE		
EAT	ENTERING AIR TEMPERATURE	MIL	1/1000th INCH		
EC	EXPANSION COMPENSATOR	MIN	MINIMUM		
ECUH	ELECTRIC CABINET UNIT HEATER	MISC	MISCELLANEOUS		
EDB	ENTERING DRY BULB	MMBH	MILLION BRITISH THERMAL UNITS PER HOUR		
EER	ENERGY EFFICIENCY RATIO	M/S	MOTOR STARTER		
EES	EMERGENCY EYE WASH / SHOWER	MTD	MOUNTED		
EEW	EMERGENCY EYE WASH	MTR	MOTOR		
EF	EXHAUST FAN	MV	MANUAL AIR VENT		
EFF	EFFICIENCY	MVAC	MEDICAL VACUUM		
EHK	ELECTRIC HEATING COIL	N	NITROGEN		
EJ	EXPANSION JOINT	N2O	NITROUS OXIDE		
EL	ELEVATION	NC	NOISE CRITERIA		
ELEC	ELECTRICAL	NC	NORMALLY CLOSED		
EMS	ENERGY MANAGEMENT SYSTEM	NCTC	NORMALLY CLOSED TIMED CLOSED		
ERL	ENERGY RECOVERY LOOP	NCTO	NORMALLY CLOSED TIMED OPEN		
ERLR	ENERGY RECOVERY LOOP RETURN	NFTA	NATIONAL FIRE PROTECTION ASSOCIATION		
ERLS	ENERGY RECOVERY LOOP SUPPLY	NOTC	NORMALLY OPEN TIMED CLOSED		
ERU	ENERGY RECOVERY UNIT	NOTO	NORMALLY OPEN TIMED OPEN		
ESH	EMERGENCY SHOWER	NO	NOT IN CONTRACT		
ESP	EXTERNAL STATIC PRESSURE	NO	NORMALLY OPEN		
ELH	ELECTRIC UNIT HEATER	NOM	NOMINAL		
EMB	ENTERING WET BULB	NPBW	NON POTABLE COLD WATER		
EW	ELECTRIC WATER COOLER	O	OXYGEN		
EWT	ENTERING WATER TEMPERATURE	OA	OUTSIDE AIR		
EXH	EXHAUST	OAT	OUTSIDE AIR TEMPERATURE		
		OB	OUTLET BOX		
F	FIRE PROTECTION	OBD	OPPOSED BLADE DAMPER		
F	DEGREES FAHRENHEIT	OC	ON CENTER/CENTER TO CENTER		
F&B	FACE AND BYPASS	OD	OUTSIDE DIAMETER		
F&T	FACE AND THERMOSTATIC	OFD	OWNER FURNISHED, CONTRACTOR INSTALLED		
FA	FACE AREA	OFI	OWNER FURNISHED, OWNER INSTALLED		
FCU	FAN COIL UNIT	OL	OVERLOAD		
		ORC	OVERFLOW RAIN CONDUCTOR		
		ORD	OVERFLOW ROOF DRAIN		
		OS&Y	OUTSIDE SCREW AND YOKE		
		OV	OUTLET VELOCITY		
		OWS	OPERATOR WORKSTATION		

TEMPERATURE CONTROL - PARTIAL SYMBOLS LIST

SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION
	CARBON DIOXIDE SENSOR		OCCUPANCY SENSOR
	CARBON MONOXIDE SENSOR		PRESSURE TRANSMITTER
	DIFFERENTIAL PRESSURE TRANSMITTER		STATIC PRESSURE SENSOR OR PROBE
	FLOW METER		VALVE - 2 WAY CONTROL VALVE
	GUARD FOR STAT OR SENSOR		VALVE - 3 WAY CONTROL VALVE
	HUMIDISTAT OR HUMIDITY SENSOR (AS DEFINED ON TC DRAWINGS)		THERMOSTAT OR TEMPERATURE SENSOR (AS DEFINED ON TC DRAWINGS)

NOTE: LIST OF ADDITIONAL SYMBOLS & ABBREVIATIONS ASSOCIATED WITH TEMPERATURE CONTROLS ARE IDENTIFIED ON TC DRAWINGS.

MECHANICAL SYMBOL LIST

SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION
	AIR VENT - AUTOMATIC		RELOCATED RETURN GRILLE OR REGISTER
	AIR VENT - MANUAL		RETURN AIR RETURN AIR TEMPERATURE
	BACKFLOW PREVENTER		RAIN CONDUCTOR
	CATCH BASIN		RADIANT CEILING PANEL
	CIRCULATING PUMP		ROOF DRAIN
	CLEAN OUT - IN FLOOR		REQUIRED
	CLEAN OUT - FLANGE		ROOF EXHAUST FAN
	DIRECTION OF FLOW		RETURN FAN
	DIRECTION OF FITCH - DOWN		RELATIVE HUMIDITY
	FINNED TUBE RADIATION		REFRIGERANT LIQUID
	FIRE PROTECTION - SIAMESE CONNECTION - FREE STANDING		RELIEF AIR
	FIRE PROTECTION - SIAMESE CONNECTION - WALL MOUNTED		REVOLUTIONS PER MINUTE
	FIRE PROTECTION - SPRINKLER HEAD, CONCEALED		REDUCED PRESSURE BACKFLOW PREVENTION DETECTION ASSY
	FIRE PROTECTION - SPRINKLER HEAD, PENDANT		REDUCED PRESSURE BACKFLOW PREVENTION ZONE ASSY
	FIRE PROTECTION - SPRINKLER HEAD, UPRIGHT		REFRIGERANT SUCTION
	FIRE PROTECTION - SPRINKLER HEAD, SIDEWALL		ROOFTOP UNIT
	FLOOR DRAIN		SUPPLY AIR DIFFUSER OR GRILLE
	FLOOR DRAIN - ELEVATION		SOUND ATTENUATOR
	FLOOR DRAIN - FUNNEL		SUPPLY AIR
	FLOOR DRAIN - FUNNEL, ELEVATION		SANITARY WASTE
	FLOOR DRAIN - FLANGE		SUPPLY AIR TEMPERATURE SECTION
	FLOOR DRAIN - FLANGE, ELEVATION		SECTION
	FLOOR DRAIN - FLANGE, ELEVATION		SUPPLY FAN
	FLOOR DRAIN - FLANGE, ELEVATION		SHOWER
	FLOOR DRAIN - FLANGE, ELEVATION		SINK
	FLOOR DRAIN - FLANGE, ELEVATION		SNOW MELT RETURN
	FLOOR DRAIN - FLANGE, ELEVATION		SNOW MELT SUPPLY
	FLOOR DRAIN - FLANGE, ELEVATION		STATIC PRESSURE SPECIFICATION
	FLOOR DRAIN - FLANGE, ELEVATION		SPRINKLER
	FLOOR DRAIN - FLANGE, ELEVATION		SQUARE FOOT/SQUARE FEET
	FLOOR DRAIN - FLANGE, ELEVATION		START/STOP
	FLOOR DRAIN - FLANGE, ELEVATION		SERVICE SINK
	FLOOR DRAIN - FLANGE, ELEVATION		STORM
	FLOOR DRAIN - FLANGE, ELEVATION		STANDARD
	FLOOR DRAIN - FLANGE, ELEVATION		STACK
	FLOOR DRAIN - FLANGE, ELEVATION		STEAM
	FLOOR DRAIN - FLANGE, ELEVATION		STEAM (SPECIFIC PSIG)
	FLOOR DRAIN - FLANGE, ELEVATION		SUMMER/WINTER SWITCH
	FLOOR DRAIN - FLANGE, ELEVATION		TRANSFER GRILLE
	FLOOR DRAIN - FLANGE, ELEVATION		TEMPERATURE CONTROL
	FLOOR DRAIN - FLANGE, ELEVATION		TEMPERING COIL
	FLOOR DRAIN - FLANGE, ELEVATION		TEMPERATURE CONTROL PANEL
	FLOOR DRAIN - FLANGE, ELEVATION		TRENCH DRAIN
	FLOOR DRAIN - FLANGE, ELEVATION		TEMPERATURE
	FLOOR DRAIN - FLANGE, ELEVATION		TEMPERATURE
	FLOOR DRAIN - FLANGE, ELEVATION		TEMPERATURE
	FLOOR DRAIN - FLANGE, ELEVATION		TERMINAL HEATING
	FLOOR DRAIN - FLANGE, ELEVATION		TOTAL HEAT ABSORBED
	FLOOR DRAIN - FLANGE, ELEVATION		TERMINAL HEATING RETURN
	FLOOR DRAIN - FLANGE, ELEVATION		TOTAL HEAT REJECTED
	FLOOR DRAIN - FLANGE, ELEVATION		TERMINAL HEATING SUPPLY
	FLOOR DRAIN - FLANGE, ELEVATION		TOTAL STATIC PRESSURE (AIR) TERMINAL UNIT
	FLOOR DRAIN - FLANGE, ELEVATION		TURNING VANES
	FLOOR DRAIN - FLANGE, ELEVATION		TYPICAL
	FLOOR DRAIN - FLANGE, ELEVATION		UNIT HEATER
	FLOOR DRAIN - FLANGE, ELEVATION		UNDERWRITER'S LABORATORY
	FLOOR DRAIN - FLANGE, ELEVATION		UNLESS OTHERWISE NOTED
	FLOOR DRAIN - FLANGE, ELEVATION		URINAL
	FLOOR DRAIN - FLANGE, ELEVATION		UNIT VENTILATOR
	FLOOR DRAIN - FLANGE, ELEVATION		VALVE
	FLOOR DRAIN - FLANGE, ELEVATION		VENT
	FLOOR DRAIN - FLANGE, ELEVATION		VACUUM
	FLOOR DRAIN - FLANGE, ELEVATION		VARIABLE AIR VOLUME
	FLOOR DRAIN - FLANGE, ELEVATION		VACUUM BREAKER
	FLOOR DRAIN - FLANGE, ELEVATION		VOLUME DAMPER (MANUALLY ADJUSTABLE)
	FLOOR DRAIN - FLANGE, ELEVATION		VOLUME
	FLOOR DRAIN - FLANGE, ELEVATION		VARIABLE FREQUENCY CONTROLLER
	FLOOR DRAIN - FLANGE, ELEVATION		VENT THROUGH ROOF
	FLOOR DRAIN - FLANGE, ELEVATION		VENTUR TERMINAL UNIT
	FLOOR DRAIN - FLANGE, ELEVATION		VERTICAL UNIT VENTILATOR
	FLOOR DRAIN - FLANGE, ELEVATION		WASTE
	FLOOR DRAIN - FLANGE, ELEVATION		WASTE AND VENT
	FLOOR DRAIN - FLANGE, ELEVATION		WASTE ANESTHETIC GAS DISPOSAL
	FLOOR DRAIN - FLANGE, ELEVATION		WET BULB
	FLOOR DRAIN - FLANGE, ELEVATION		WATER CLOSET
	FLOOR DRAIN - FLANGE, ELEVATION		WATER COLUMN
	FLOOR DRAIN - FLANGE, ELEVATION		WATER GAUGE
	FLOOR DRAIN - FLANGE, ELEVATION		WALL HYDRANT
	FLOOR DRAIN - FLANGE, ELEVATION		WASHING MACHINE SUPPLY AND DRAIN BOX
	FLOOR DRAIN - FLANGE, ELEVATION		WATER PRESSURE DROP
	FLOOR DRAIN - FLANGE, ELEVATION		WEIGHT
	FLOOR DRAIN - FLANGE, ELEVATION		TRANSFORMER

DOUBLE LINE PIPING SYMBOLS

SYMBOL	DESCRIPTION
	FLANGE
	FLEX CONNECTION
	STRAINER - BASKET

MECHANICAL GENERAL REQUIREMENTS

- A. REFERENCES: MECHANICAL AND PHYSICAL PROPERTIES OF ALL MATERIALS, AND THE DESIGN, PERFORMANCE CHARACTERISTICS, AND METHODS OF CONSTRUCTION OF ALL ITEMS OF EQUIPMENT, SHALL BE IN ACCORDANCE WITH THE LATEST ISSUE OF THE VARIOUS, APPLICABLE STANDARD SPECIFICATIONS.
- B. PERFORMANCE REQUIREMENTS: SYSTEMS COMPONENTS PRESSURE AND TEMPERATURE RATINGS: NOT LESS THAN INDICATED AND AS REQUIRED FOR SYSTEM PRESSURES AND TEMPERATURES.
- C. QUALITY ASSURANCE:
1. SCOPE OF WORK: FURNISH ALL LABOR, MATERIAL, EQUIPMENT, TECHNICAL SUPERVISION, AND INCIDENTAL SERVICES REQUIRED TO COMPLETE, TEST AND LEAVE READY FOR OPERATION THE MECHANICAL SYSTEMS AS SPECIFIED AND AS INDICATED ON DRAWINGS.
2. ORDINANCES AND CODES: PERFORM ALL WORK IN ACCORDANCE WITH APPLICABLE FEDERAL, STATE AND LOCAL ORDINANCES AND REGULATIONS, THE RULES AND REGULATIONS OF ASHRAE, NFPA, SMACNA AND UL, UNLESS OTHERWISE INDICATED.
3. SOURCE LIMITATIONS: EQUIPMENT OF THE SAME OR SIMILAR SYSTEMS SHALL BE BY THE SAME MANUFACTURER.
4. TESTS AND INSPECTIONS: PERFORM ALL TESTS REQUIRED BY STATE, CITY, COUNTY AND/OR OTHER AGENCIES HAVING JURISDICTION. PROVIDE ALL MATERIALS, EQUIPMENT, ETC., AND LABOR REQUIRED FOR TESTS.
5. SEQUENCE AND SCHEDULE: WORK SO AS TO AVOID INTERFERENCE WITH THE WORK OF OTHER TRADES. BE RESPONSIBLE FOR REMOVING AND RELOCATING ANY WORK WHICH IN THE OPINION OF THE OWNER'S REPRESENTATIVES CAUSES INTERFERENCE.
6. LABELING REQUIREMENT FOR PACKAGED EQUIPMENT: ELECTRICAL PANELS ON PACKAGED MECHANICAL EQUIPMENT SHALL BEAR UL LABEL OR LABEL OF OTHER NATIONALLY RECOGNIZED TESTING LABORATORY (NRTL) (ITSA, CSA, ETC.).
7. ELECTRICAL COMPONENTS, DEVICES, AND ACCESSORIES: LISTED AND LABELED AS DEFINED IN NFPA 70, ARTICLE 100, BY AN NRTL ACCEPTABLE TO AUTHORITIES HAVING JURISDICTION, AND MARKED FOR INTENDED USE.
D. CODES, PERMITS AND FEES:
1. UNLESS OTHERWISE INDICATED, ALL REQUIRED PERMITS, LICENSES, INSPECTIONS, APPROVALS AND FEES FOR MECHANICAL WORK SHALL BE SECURED AND PAID FOR BY THE CONTRACTOR. ALL WORK SHALL CONFORM TO ALL APPLICABLE CODES, RULES AND REGULATIONS.
2. WORK SHALL BE EXECUTED IN ACCORDANCE WITH THE RULES AND REGULATIONS SET FORTH IN LOCAL AND STATE CODES. PREPARE ANY DETAILED DRAWINGS OR DIAGRAMS WHICH MAY BE REQUIRED BY THE GOVERNING AUTHORITIES. WHERE THE DRAWINGS AND SPECIFICATIONS INDICATE MATERIALS OR CONSTRUCTION IN EXCESS OF CODE REQUIREMENTS, THE DRAWINGS AND SPECIFICATIONS SHALL GOVERN.
3. THE DRAWINGS SHOW LOCATION AND GENERAL ARRANGEMENT OF EQUIPMENT, PIPING AND RELATED ITEMS. FOLLOW DRAWINGS AS CLOSELY AS ELEMENTS OF THE CONSTRUCTION PERMIT.
F. MATERIAL AND EQUIPMENT MANUFACTURERS:
1. EQUIPMENT: ALL ITEMS OF EQUIPMENT SHALL BE FURNISHED COMPLETE WITH ALL ACCESSORIES NORMALLY SUPPLIED WITH THE CATALOG ITEMS LISTED AND ALL OTHER ACCESSORIES NECESSARY FOR COMPLETE AND SATISFACTORY OPERATING SYSTEM. EQUIPMENT AND MATERIALS SHALL BE NEW AND SHALL BE STANDARD PRODUCTS OF MANUFACTURERS REGULARLY ENGAGED IN THE PRODUCTION OF FIRE PROTECTION; PLUMBING; HEATING, VENTILATING AND AIR CONDITIONING EQUIPMENT; AND SHALL BE MANUFACTURER'S LATEST DESIGN.
2. PACKAGE UNIT EQUIPMENT AND SKID MOUNTED MECHANICAL COMPONENTS THAT ARE FACTORY ASSEMBLED SHALL MEET, IN DETAIL, PRODUCTS NAMED AND SPECIFIED IN EACH SECTION OF MECHANICAL AND ELECTRICAL SPECIFICATIONS.
3. WHERE EQUIPMENT CHANGES ARE MADE THAT INVOLVE ADDITIONAL ELECTRICAL WORK (LARGER SIZE MOTOR, ADDITIONAL WIRING OF EQUIPMENT, ETC.) THE MECHANICAL TRADES INVOLVED SHALL COMPENSATE THE ELECTRICAL TRADES FOR THE COST OF THE ADDITIONAL WORK REQUIRED.
G. INSPECTION OF SITE: VISIT SITE, EXAMINE AND VERIFY CONDITIONS UNDER WHICH WORK MUST BE CONDUCTED BEFORE SUBMITTING PROPOSAL. SUBMITTING OF PROPOSAL IMPLIES THAT CONTRACTOR HAS VISITED SITE AND UNDERSTANDS CONDITIONS UNDER WHICH WORK MUST BE CONDUCTED. NO ADDITIONAL CHARGES WILL BE ALLOWED BECAUSE OF FAILURE TO MAKE THIS EXAMINATION OR TO INCLUDE ALL MATERIALS AND LABOR TO COMPLETE WORK.
H. SUBMITTALS: SUBMIT PROJECT SPECIFIC SUBMITTALS FOR REVIEW.
I. DELIVERY, STORAGE, AND HANDLING: STORAGE AND PROTECTION: PROVIDE ADEQUATE WEATHER PROTECTED STORAGE SPACE FOR ALL MECHANICAL EQUIPMENT AND MATERIALS DELIVERIES TO THE JOB SITE. STORAGE LOCATIONS WILL BE DESIGNATED BY THE OWNER'S REPRESENTATIVE. EQUIPMENT STORED IN UNPROTECTED AREAS MUST BE PROVIDED WITH TEMPORARY PROTECTION.
J. INSTRUCTION OF OWNER PERSONNEL: BEFORE FINAL INSPECTION, INSTRUCT OWNER'S DESIGNATED PERSONNEL IN OPERATION, ADJUSTMENT, AND MAINTENANCE OF MECHANICAL EQUIPMENT AND SYSTEMS AT AGREED UPON TIMES. A MINIMUM OF 24 HOURS OF FORMAL INSTRUCTION TO OWNER'S PERSONNEL SHALL BE PROVIDED FOR EACH BUILDING. ADDITIONAL HOURS ARE SPECIFIED IN INDIVIDUAL SPECIFICATION SECTIONS.
K. WARRANTY: CONTRACTOR SHALL WARRANTY THAT MECHANICAL INSTALLATION IS FREE FROM DEFECTS AND AGREES TO REPLACE OR REPAIR, TO OWNER'S SATISFACTION, ANY PART OF THIS MECHANICAL INSTALLATION WHICH BECOMES DEFECTIVE WITHIN A PERIOD OF ONE YEAR (UNLESS SPECIFIED OTHERWISE) FROM THE DATE OF SUBSTANTIAL COMPLETION FOLLOWING FINAL ACCEPTANCE, PROVIDED THAT SUCH FAILURE IS DUE TO DEFECTS IN EQUIPMENT, MATERIAL, WORKMANSHIP OR FAILURE TO FOLLOW CONTRACT DOCUMENTS. FILE WITH OWNER ANY AND ALL WARRANTIES FROM EQUIPMENT MANUFACTURERS INCLUDING OPERATING CONDITIONS AND PERFORMANCE CAPACITIES THEY ARE BASED ON.
L. MECHANICAL DEMOLITION WORK: DEMOLITION OF EXISTING MECHANICAL EQUIPMENT AND MATERIALS SHALL BE DONE BY THE CONTRACTOR UNLESS OTHERWISE INDICATED. INCLUDE ALL ITEMS SUCH AS, BUT NOT LIMITED TO, EXISTING PIPING, PUMPS, DUCTWORK, SUPPORTS AND EQUIPMENT WHERE SUCH ITEMS ARE NOT REQUIRED FOR PROPER OPERATION OF MODIFIED SYSTEM. IN GENERAL, DEMOLITION WORK IS INDICATED ON DRAWINGS. HOWEVER, THE CONTRACTOR SHALL VISIT JOB SITE TO DETERMINE FULL EXTENT AND CHARACTER OF THIS WORK.
M. WORK IN EXISTING BUILDINGS:
1. OWNER WILL PROVIDE ACCESS TO EXISTING BUILDINGS AS REQUIRED. ACCESS REQUIREMENTS TO OCCUPIED BUILDINGS SHALL BE IDENTIFIED IN DETAIL BY CONTRACTOR. ONCE WORK IS STARTED IN EXISTING BUILDING, SHALL COMPLETE SAME WITHOUT INTERRUPTION IN ORDER TO RETURN WORK AREAS AS SOON AS POSSIBLE TO OWNER.
2. ADEQUATELY PROTECT AND PRESERVE ALL EXISTING AND NEWLY INSTALLED WORK. PROMPTLY REPAIR ANY DAMAGE TO SAME AT CONTRACTOR'S EXPENSE.
3. CONSULT WITH OWNER'S REPRESENTATIVE AS TO METHODS OF CARRYING ON WORK SO AS NOT TO INTERFERE WITH OWNER'S OPERATION ANY MORE THAN ABSOLUTELY NECESSARY. ACCORDINGLY, ALL SERVICE LINES SHALL BE KEPT IN OPERATION AS LONG AS POSSIBLE AND THE SERVICES SHALL ONLY BE INTERRUPTED AT SUCH TIME AS WILL BE DESIGNATED BY THE OWNER'S REPRESENTATIVE.
4. PRIOR TO STARTING WORK IN ANY AREA, OBTAIN APPROVAL FOR DOING SO FROM A QUALIFIED REPRESENTATIVE OF THE OWNER WHO IS DESIGNATED AND AUTHORIZED BY THE OWNER TO PERFORM TESTING AND ABATEMENT. IF NECESSARY, OF ALL HAZARDOUS MATERIALS INCLUDING BUT NOT LIMITED TO, ASBESTOS, CONTRACTOR SHALL NOT PERFORM ANY INSPECTION, TESTING, CONTAINMENT, REMOVAL OR OTHER WORK THAT IS RELATED IN ANY WAY WHATSOEVER TO HAZARDOUS MATERIALS UNDER THE CONTRACT.
N. TEMPORARY SERVICES: THE EXISTING BUILDING WILL BE OCCUPIED DURING CONSTRUCTION. MAINTAIN MECHANICAL SERVICES AND PROVIDE NECESSARY TEMPORARY CONNECTIONS AND THEIR REMOVAL AT NO ADDITIONAL EXPENSE.
O. WORK INVOLVING OTHER TRADES: CERTAIN ITEMS OF EQUIPMENT OR MATERIALS SPECIFIED IN THE MECHANICAL DIVISION MAY HAVE TO BE INSTALLED BY OTHER TRADES DUE TO CODE REQUIREMENTS OR UNION JURISDICTIONAL REQUIREMENTS. IN SUCH INSTANCES, CONTRACTOR SHALL COMPLETE WORK THROUGH AN APPROVED, QUALIFIED SUBCONTRACTOR AND SHALL INCLUDE FULL COST FOR SAME IN PROPOSAL.
P. ACCEPTANCE PROCEDURE: UPON SUCCESSFUL COMPLETION OF START-UP AND RECALIBRATION, BUT PRIOR TO BUILDING ACCEPTANCE, SUBSTANTIAL COMPLETION AND COMMENCEMENT OF WARRANTIES, ARCHITECT/ENGINEER SHALL BE REQUESTED IN WRITING TO OBSERVE THE SATISFACTORY OPERATION OF ALL MECHANICAL SYSTEMS.
1. CONTRACTOR SHALL DEMONSTRATE OPERATION OF EQUIPMENT AND CONTROL SYSTEMS, INCLUDING EACH INDIVIDUAL COMPONENT, TO OWNER AND ARCHITECT/ENGINEER.
2. AFTER CORRECTING ALL ITEMS APPEARING ON THE PUNCH LIST, MAKE A SECOND WRITTEN REQUEST TO THE OWNER AND ARCHITECT/ENGINEER FOR OBSERVATION AND APPROVAL.
3. AFTER ALL ITEMS ON PUNCH LIST ARE CORRECTED AND FORMAL APPROVAL OF MECHANICAL SYSTEMS IS PROVIDED BY ARCHITECT/ENGINEER, CONTRACTOR SHALL INDICATE TO THE OWNER IN WRITING THE COMMENCEMENT OF THE WARRANTY PERIOD.
- BASIC MECHANICAL MATERIALS AND METHODS**
A. PIPE, TUBE, AND FITTINGS:
1. REFER TO INDIVIDUAL PIPING SECTIONS FOR PIPE, TUBE, AND FITTING MATERIALS AND JOINING METHODS.
2. PIPE THREADS: ASME B1.20.1 FOR FACTORY-THREADED PIPE AND PIPE FITTINGS.
B. JOINING MATERIALS:
1. REFER TO INDIVIDUAL PIPING SPECIFICATIONS FOR SPECIAL JOINING MATERIALS NOT LISTED BELOW.
2. UNIONS: PIPE SIZE 2 INCHES AND SMALLER: FERROUS PIPE: MALLEABLE IRON GROUND JOINT TYPE UNIONS. UNIONS IN GALVANIZED PIPING SYSTEM SHALL BE GALVANIZED. COPPER TUBE AND JOINT: BRONZE UNIONS WITH SOLDERED JOINTS.
3. FLANGES: PIPE SIZES 2-1/2 INCH AND LARGER: FERROUS PIPE: STANDARD WEIGHT FORGED STEEL WELD NECK FLANGES. COPPER TUBE AND PIPE: SUPER-OR BRONZE FLANGES.
4. PIPE-FLANGE GASKET MATERIALS: SUITABLE FOR CHEMICAL AND THERMAL CONDITIONS OF PIPING SYSTEM CONTENTS.
5. FLANGE BOLTS AND NUTS: ASME B18.2.1, CARBON STEEL, UNLESS OTHERWISE INDICATED. SQUARE HEAD BOLTS AND NUTS ARE NOT ACCEPTABLE.
6. SOLDER FILLER METALS: ASTM B 32, LEAD-FREE, ANTIMONY-FREE, SILVER-BEARING ALLOYS. INCLUDE WATER-FLUSHABLE FLUX ACCORDING TO ASTM B 813.
7. BRAZING FILLER METALS: AWS A5.8, COPU SERIES, COPPER-PHOSPHORUS ALLOYS FOR GENERAL-DUTY BRAZING, UNLESS OTHERWISE INDICATED; AND AWS A5.8, BAGI, SILVER ALLOY FOR REFRIGERANT PIPING, UNLESS OTHERWISE INDICATED.

- C. PIPE THREAD COMPOUNDS:
1. PIPE THREAD COMPOUNDS FOR THE FLUID SERVICE COMPATIBLE WITH PIPING MATERIALS PROVIDED.
2. COMPOUNDS FOR POTABLE WATER SERVICE AND SIMILAR APPLICATIONS ACCEPTABLE TO U.S. DEPARTMENT OF AGRICULTURE (USDA) OR FOOD AND DRUG ADMINISTRATION (FDA), COMPOUNDS CONTAINING LEAD ARE PROHIBITED.
3. INORGANIC ZINC-RICH COATINGS OR CORROSION INHIBITED PROPRIETARY COMPOUNDS FOR GALVANIZED CARBON STEEL SYSTEMS TO COAT RAW CARBON STEEL SURFACES, IN LIEU OF SUBSEQUENT PAINTING. MANUFACTURERS: CARBOLINE CARBO-ZINC 12 | NEMEC; KOPPERS.
4. GRAPHITE AND OIL OR PROPRIETARY CORROSION INHIBITED COMPOUNDS SUITABLE FOR SYSTEM TEMPERATURES FOR STEAM OR CONDENSATE. MANUFACTURERS: WGM, DIVISION OF COOPER INDUSTRIES, INC., KEY GRAPHITE PASTE | OTHER APPROVED.
5. USE TETRAFLUOROETHYLENE (TEFLON) TAPE 2 TO 3 MILS THICK FOR NATURAL GAS SYSTEM THREADED JOINTS. MANUFACTURERS: CADILLAC PLASTIC; PERMACEL | OTHER APPROVED.
D. DIELECTRIC FITTINGS: PROVIDE DIELECTRIC FITTINGS AS SCHEDULED ON THE DRAWINGS.
1. DIELECTRIC-FLANGE KITS:
a. MANUFACTURERS: ADVANCE PRODUCTS & SYSTEMS, INC. | CALPICO, INC. | CENTRAL PLASTICS COMPANY | PIPELINE SEAL AND INSULATOR, INC. | WATTS WATER TECHNOLOGIES, INC.; WATTS REGULATOR CO.
2. DIELECTRIC NIPPLE/WATERWAY FITTINGS:
a. MANUFACTURERS: ANVIL INTERNATIONAL, INC.; GRUVLOK MANUFACTURING; DI-LOK NIPPLES | ELSTER GROUP; PERFECTION CORP.; CLEARFLOW | PRECISION PLUMBING PRODUCTS, INC.; CLEARFLOW | SIOUX CHIEF MANUFACTURING CO., INC. | TYCO FIRE & BUILDING PRODUCTS; GRINNELL MECHANICAL PRODUCTS; FIGURE 407 CLEARFLOW | VICTALUC CO. OF AMERICA; STYLE 47 CLEARFLOW.

- E. MECHANICAL SLEEVE SEALS:
1. DESCRIPTION: MODULAR SEALING ELEMENT UNIT, DESIGNED FOR FIELD ASSEMBLY, TO FILL ANNULAR SPACE BETWEEN PIPE AND SLEEVE.
2. MANUFACTURERS: ADVANCE PRODUCTS & SYSTEMS, INC. | CALPICO, INC. | METRAFLEX CO. | PIPELINE SEAL AND INSULATOR, INC., THUNDERLINE LINK SEAL.
F. SLEEVES:
1. STEEL PIPE: ASTM A53, TYPE E, GRADE B, SCHEDULE 40, AND 0.375 INCH WALL BLACK.
2. STEEL PIPE: ASTM A53, TYPE E, GRADE B, SCHEDULE 40, AND 0.375 INCH WALL GALVANIZED, PLAIN ENDS.
3. CAST IRON: CAST OR FABRICATED "WALL PIPE" EQUIVALENT TO DUCTILE-IRON PRESSURE PIPE, WITH FLANG ENDS AND INTEGRAL WATERSTOP, UNLESS OTHERWISE INDICATED.
4. STACK SLEEVE FITTINGS: MANUFACTURED, CAST-IRON SLEEVE WITH INTEGRAL CLAMPING FLANGE. INCLUDE CLAMPING RING AND BOLTS AND NUTS FOR MEMBRANE FLASHING.
G. ESCUTCHEONS: MANUFACTURED WALL AND CEILING ESCUTCHEONS, WITH AN OIL TO CLOSELY FIT AROUND PIPE, TUBE, AND INSULATION OF INSULATED PIPING AND AN OIL THAT COMPLETELY COVERS OPENING.
H. EPOXY BONDING COMPOUND: TWO-COMPONENT SYSTEM SUITABLE FOR BONDING WET OR DRY CONCRETE TO EACH OTHER AND TO OTHER MATERIALS.
1. MANUFACTURERS: EUCC 452 #450, EUCLID CHEMICAL CO. | EPOBOND, L & M CONSTRUCTION CHEMICALS | SIKADUR 87, Sika Corp.

HANGERS AND SUPPORTS

- A. PIPE HANGERS, SUPPORTS, AND ACCESSORIES SHALL COMPLY WITH THE FOLLOWING:
1. MSS SP-58, PIPE HANGERS AND SUPPORTS - MATERIALS, DESIGN AND MANUFACTURE.
2. MSS SP-69, PIPE HANGERS AND SUPPORTS - SELECTION AND APPLICATION.
3. MSS SP-89, PIPE HANGERS AND SUPPORTS - FABRICATION AND INSTALLATION PRACTICES.
B. HANGER ROD MATERIAL: THREADED, HOT ROLLED, STEEL ROD CONFORMING TO ASTM A 36 OR ASTM A 575.
C. STEEL PIPE HANGERS AND SUPPORTS: MSS SP-58, TYPES 1 THROUGH 58, FACTORY-FABRICATED COMPONENTS.
1. MANUFACTURERS: ANVIL INTERNATIONAL, INC. | B-LINE BY EATON | CARPENTER & PATERSON, INC. | HILTI USA | NVENT ELECTRIC PLC | PHD MANUFACTURING, INC.
D. TRAPEZE PIPE HANGERS: MSS SP-69, TYPE 59, SHOP- OR FIELD-FABRICATED PIPE-SUPPORT ASSEMBLY MADE FROM STRUCTURAL-STEEL SHAPES WITH MSS SP-58 HANGER RODS, NUTS, SADDLES, AND U-BOLTS.
E. METAL FRAMING SYSTEMS: DESCRIPTION: MFMA-3, SHOP- OR FIELD-FABRICATED PIPE-SUPPORT ASSEMBLY MADE OF STEEL CHANNELS AND OTHER COMPONENTS.
1. MANUFACTURERS: B-LINE BY EATON | HILTI USA | POWER-STRUT A PART OF ATKORE INTERNATIONAL | UNISTRUT A PART OF ATKORE INTERNATIONAL.
F. THERMAL-HANGER SHIELD INSERTS: DESCRIPTION: INSULATION INSERT ENCASED IN 360 DEGREE SHEET METAL SHIELD.
1. MANUFACTURERS: AMERICAN MECHANICAL INSULATION SALES INC. (AMIS) | B-LINE BY EATON | NVENT ELECTRIC PLC | PIPE SHIELDS, INC. | RILCO MANUFACTURING COMPANY, INC. | VALVE ENGINEERED PRODUCTS.
G. MISCELLANEOUS MATERIALS: ASTM A 36/A 36M, STEEL PLATES, SHAPES, AND BARS; BLACK AND GALVANIZED.

MECHANICAL IDENTIFICATION

- A. MANUFACTURERS: SETON | BRADY | EMED | CRAFTMARK | BRIMAR INDUSTRIES, INC. | MARKING SERVICES INC. (MSI) | KOLBI PIPE MARKER CO.
B. PIPE MARKERS:
1. GENERAL REQUIREMENTS FOR MANUFACTURED PIPE LABELS: PREPRINTED, COLOR-CODED, WITH LETTERING INDICATING SERVICE, AND SHOWING FLOW DIRECTION.
2. PRETENSIONED PIPE LABELS: PRECOILED, SEMIRIGID PLASTIC FORMED TO COVER FULL CIRCUMFERENCE OF PIPE AND TO ATTACH TO PIPE WITHOUT FASTENERS OR ADHESIVE.
3. SELF-ADHESIVE PIPE LABELS: PRINTED PLASTIC WITH CONTACT-TYPE, PERMANENT-ADHESIVE BACKING.
4. PIPE LABEL CONTENTS: INCLUDE IDENTIFICATION OF PIPING SERVICE USING SAME DESIGNATIONS OR ABBREVIATIONS AS USED ON DRAWINGS, PIPE SIZE, AND AN ARROW INDICATING FLOW DIRECTION.
a. FLOW-DIRECTION ARROWS: INTEGRAL WITH PIPING SYSTEM SERVICE LETTERING TO ACCOMMODATE BOTH DIRECTIONS, OR AS SEPARATE UNIT ON EACH PIPE LABEL TO INDICATE FLOW DIRECTION.
b. LETTERING SIZE: AT LEAST 1-1/2 INCHES HIGH.
C. DUCT LABELS:
1. MARKERS: MNYL, 2-INCH MINIMUM CHARACTER HEIGHT, WITH PERMANENT PRESSURE SENSITIVE ADHESIVE, INCLUDE DIRECTION AND QUANTITY OF AERFLOW, AIR HANDLING UNIT OR FAN NUMBER, AND DUCT SERVICE (SUCH AS SUPPLY, RETURN, AND EXHAUST).
2. ADHESIVE: CONTACT-TYPE PERMANENT ADHESIVE, COMPATIBLE WITH LABEL AND WITH SUBSTRATE.
3. DUCT MARKERS: ENGRAVED, COLOR-CODED LAMINATED PLASTIC, INCLUDE DIRECTION AND QUANTITY OF AIRFLOW, AIR HANDLING UNIT OR FAN NUMBER, AND DUCT SERVICE (SUCH AS SUPPLY, RETURN, AND EXHAUST). INCLUDE CONTACT-TYPE, PERMANENT ADHESIVE.
a. FASTENERS: STAINLESS-STEEL RIVETS OR SELF-TAPPING SCREWS.

MECHANICAL INSULATION

- A. ACCEPTABLE PIPE, DUCT, AND EQUIPMENT INSULATION MATERIALS AND THICKNESSES ARE SCHEDULED ON THE DRAWINGS. WHERE NOT SCHEDULED, THE FOLLOWING APPLY:
1. INDOOR PIPING:
a. HOT SERVICE DRAINS, ALL PIPE SIZES: GLASS-FIBER OR MINERAL WOOL, PREFORMED PIPE INSULATION, TYPE I OR II 1 INCH THICK.
b. HOT SERVICE VENTS, ALL PIPE SIZES: GLASS-FIBER OR MINERAL WOOL, PREFORMED PIPE INSULATION, TYPE I OR II 1 INCH THICK.
c. EXISTING PLASTIC WATER PIPING WITHIN RETURN AIR PLENUM SPACE: ALL PIPE SIZES: INSULATION SHALL BE:
1) FIRE-RATED PLENUM WRAP: 1/2 INCH THICK.
B. PIPE INSULATION MATERIALS:
1. FLEXIBLE ELASTOMERIC CLOSED-CELL, SPONGE- OR EXPANDED-RUBBER MATERIALS, COMPLY WITH ASTM C 534, TYPE I FOR TUBULAR MATERIALS.
a. PRODUCTS: AEROFLEX USA, INC.; AEROCEL TUBE AND SHEET | ARMACELL LLC, AP ARMAFLEX | IK INSULATION GROUP; K-FLEX; INSUL-TUBE AND INSUL-SHEET.
2. GLASS-FIBER, PREFORMED PIPE INSULATION: TYPE I, 850 DEG F MATERIALS: GLASS FIBERS BONDED WITH A THERMOSETTING RESIN. COMPLY WITH ASTM C 547, TYPE I, GRADE A, WITH FACTORY-APPLIED ASJ OR ASJ-SSL.
a. PRODUCTS: JOHNS MANVILLE; MICRO-LOK | KNAUF INSULATION; 1000 PIPE INSULATION | MANSON INSULATION INC.; ALLEY-K | OWENS CORNING; FIBERGLAS PIPE INSULATION.
C. DUCTWORK INSULATION MATERIALS:
1. BLANKET INSULATION: GLASS FIBERS BONDED WITH A THERMOSETTING RESIN. COMPLY WITH ASTM C 553, TYPE I AND ASTM C 1290, TYPE III WITH FACTORY-APPLIED FSK JACKET.
a. PRODUCTS: CERTANTIEED CORP.; DUCT WRAP | JOHNS MANVILLE; MICROLOTE | KNAUF INSULATION; DUCT WRAP | MANSON INSULATION INC.; ALLEY WRAP FSK | OWENS CORNING; ALL-SERVICE DUCT WRAP.
2. BOARD INSULATION: GLASS FIBERS BONDED WITH A THERMOSETTING RESIN. COMPLY WITH ASTM C 612, TYPE IA OR TYPE IB. FOR DUCT AND PLENUM APPLICATIONS, PROVIDE INSULATION WITH FACTORY-APPLIED FSK JACKET. FOR EQUIPMENT APPLICATIONS, PROVIDE INSULATION WITH FACTORY-APPLIED ASJ.
a. PRODUCTS: CERTANTIEED CORP.; COMMERCIAL BOARD | FIBREX INSULATIONS INC.; FBX | JOHNS MANVILLE; 800 SERIES SPIN-GLAS | KNAUF INSULATION; INSULATION BOARD | MANSON INSULATION INC.; AK BOARD | OWENS CORNING; FIBERGLAS 700 SERIES.
D. INSULATING CEMENTS, ADHESIVES, TAPES, AND SEALANTS: USE MANUFACTURER RECOMMENDED PRODUCTS.
E. MASTICS: MATERIALS SHALL BE COMPATIBLE WITH INSULATION MATERIALS, JACKETS, AND SUBSTRATES; COMPLY WITH MIL-C-19565C, TYPE II.

DOMESTIC WATER PIPING

- A. REGULATORY REQUIREMENTS: COMPLY WITH REQUIREMENTS IN PUBLIC LAW 111-380, "REDUCTION OF LEAD IN DRINKING WATER ACT," ABOUT LEAD CONTENT IN MATERIALS THAT WILL BE IN CONTACT WITH POTABLE WATER FOR HUMAN CONSUMPTION.
B. PIPING SYSTEM MATERIALS ARE SCHEDULED ON THE DRAWINGS.
C. DRAWINGS INDICATE VALVE TYPES TO BE USED. WHERE SPECIFIC VALVE TYPES ARE NOT INDICATED, THE FOLLOWING REQUIREMENTS APPLY:
1. HOT-WATER-PIPING, BALANCING DUTY: CALIBRATED BALANCING VALVES.
2. DRAIN DUTY: HOSE-END DRAIN VALVES.
D. TRANSITION AND SPECIAL FITTINGS WITH PRESSURE RATINGS AT LEAST EQUAL TO PIPING RATING MAY BE USED IN APPLICATIONS BELOW, UNLESS OTHERWISE INDICATED.
E. FLANGES MAY BE USED ON ABOVEGROUND PIPING, UNLESS OTHERWISE INDICATED.
F. HARD COPPER TUBE: ASTM B 88, TYPE L, WATER TUBE, DRAWN TEMPER.
1. COPPER PRESSURE FITTINGS: ASME B16.18, CAST-COPPER-ALLOY OR ASME B16.22, WROUGHT- COPPER, SOLDER-JOINT FITTINGS. FURNISH WROUGHT-COPPER FITTINGS IF REQUIRED TO MATCH PIPING.
2. BRONZE FLANGES: ASME B16.24, CLASS 150, WITH SOLDER-JOINT ENDS. FURNISH CLASS 300 FLANGES IF REQUIRED TO MATCH PIPING.
3. COPPER UNIONS: MSS SP-123, CAST-COPPER-ALLOY, HEXAGONAL-STOCK BODY, WITH BALL-AND-SOCKET, METAL-TO-METAL SEATING SURFACES, AND SOLDER-JOINT OR THREADED ENDS.
G. GENERAL-DUTY VALVES; AND DRAIN VALVES ARE SPECIFIED IN "VALVES."
H. BALANCING VALVES ARE SPECIFIED IN "DOMESTIC WATER PIPING SPECIALTIES."
I. PIPE HANGER AND SUPPORT DEVICES ARE SPECIFIED IN "HANGERS AND SUPPORTS." INSTALL THE FOLLOWING:
1. VERTICAL PIPING: MSS TYPE 8 OR TYPE 42, CLAMPS.
2. INDIVIDUAL, STRAIGHT, HORIZONTAL PIPING RUNS: ACCORDING TO THE FOLLOWING:
a. 100 FEET AND LESS: MSS TYPE 1, ADJUSTABLE, STEEL CLEVIS HANGERS.
b. LONGER THAN 100 FEET: MSS TYPE 43, ADJUSTABLE ROLLER HANGERS.
3. MULTIPLE, STRAIGHT, HORIZONTAL PIPING RUNS 100 FEET OR LONGER: MSS TYPE 44, PIPE ROLLS. SUPPORT PIPE ROLLS ON TRAPEZE.
4. BASE OF VERTICAL PIPING: MSS TYPE 52, SPRING HANGERS.
J. INSTALL SUPPORTS ACCORDING TO "HANGERS AND SUPPORTS."
K. SUPPORT VERTICAL PIPING AND TUBING AT BASE AND AT EACH FLOOR.
L. ROD DIAMETER MAY BE REDUCED 1 SIZE FOR DOUBLE-ROD HANGERS, TO A MINIMUM OF 3/8 INCH.
M. INSTALL HANGERS FOR COPPER TUBING WITH THE FOLLOWING MAXIMUM HORIZONTAL SPACING AND MINIMUM ROD DIAMETERS:
1. NPS 3/4 AND SMALLER: 60-INCHES WITH 3/8-INCH ROD.
2. NPS 1 AND NPS 1-1/4: 72 INCHES WITH 3/8-INCH ROD.
3. NPS 1-1/2 AND NPS 2: 96 INCHES WITH 3/8-INCH ROD.
4. NPS 2-1/2: 108 INCHES WITH 1/2-INCH ROD.
5. NPS 3 TO NPS 5: 10 FEET WITH 1/2-INCH ROD.
N. INSTALL SUPPORTS FOR VERTICAL COPPER TUBING EVERY 10 FEET.
O. SUPPORT PIPING AND TUBING NOT LISTED ABOVE ACCORDING TO MSS SP-69 AND MANUFACTURER'S WRITTEN INSTRUCTIONS.
P. TEST DOMESTIC WATER PIPING AS FOLLOWS:
1. CAP AND SUBJECT PIPING TO STATIC WATER PRESSURE OF 150 PSIG. ISOLATE TEST SOURCE AND ALLOW TO STAND FOR FOUR HOURS. LEAKS AND LOSS IN TEST PRESSURE CONSTITUTE DEFECTS THAT MUST BE REPAIRED.
2. REPAIR LEAKS AND DEFECTS WITH NEW MATERIALS AND RETEST PIPING OR PORTION THEREOF UNTIL SATISFACTORY RESULTS ARE OBTAINED.
3. PREPARE REPORTS FOR TESTS AND REQUIRED CORRECTIVE ACTION.
Q. CLEAN AND DISINFECT POTABLE DOMESTIC WATER PIPING AS FOLLOWS:
1. PURGE NEW PIPING AND PARTS OF EXISTING DOMESTIC WATER PIPING THAT HAVE BEEN ALTERED, EXTENDED, OR REPAIRED BEFORE USING.
2. USE PURGING AND DISINFECTING PROCEDURES PRESCRIBED BY AUTHORITIES HAVING JURISDICTION OR, IF METHODS ARE NOT PRESCRIBED, PROCEDURES DESCRIBED IN EITHER AWWA C651 OR AWWA C652 OR AS DESCRIBED BELOW:
a. FLUSH PIPING SYSTEM WITH CLEAN, POTABLE WATER UNTIL DIRTY WATER DOES NOT APPEAR AT OUTLETS.
b. FILL AND ISOLATE SYSTEM ACCORDING TO EITHER OF THE FOLLOWING: FILL SYSTEM OR PART THEREOF WITH WATER/CHLORINE SOLUTION WITH AT LEAST 50 PPM OF CHLORINE. ISOLATE WITH VALVES AND ALLOW TO STAND FOR 24 HOURS. FILL SYSTEM OR PART THEREOF WITH WATER/CHLORINE SOLUTION WITH AT LEAST 200 PPM OF CHLORINE. ISOLATE AND ALLOW TO STAND FOR THREE HOURS.
c. FLUSH SYSTEM WITH CLEAN, POTABLE WATER UNTIL NO CHLORINE IS IN WATER COMING FROM SYSTEM AFTER THE STANDING TIME.
3. SUBMIT WATER SAMPLES IN STERILE BOTTLES TO AUTHORITIES HAVING JURISDICTION. REPEAT PROCEDURES IF BIOLOGICAL EXAMINATION SHOWS CONTAMINATION.
4. PREPARE AND SUBMIT REPORTS OF PURGING AND DISINFECTING ACTIVITIES.
- GENERAL-DUTY VALVES FOR PLUMBING**
A. QUALITY ASSURANCE:
1. REGULATORY REQUIREMENTS: COMPLY WITH REQUIREMENTS IN PUBLIC LAW 111-380, "REDUCTION OF LEAD IN DRINKING WATER ACT," ABOUT LEAD CONTENT IN MATERIALS THAT WILL BE IN CONTACT WITH POTABLE WATER FOR HUMAN CONSUMPTION.
2. NSF COMPLIANCE: NSF 61 AND NSF 372 FOR VALVE MATERIALS FOR POTABLE-WATER SERVICE.
3. TWO-PIECE, REGULAR PORT BRONZE BALL VALVES WITH STAINLESS-STEEL TRIM: TYPE 316 STAINLESS-STEEL BALL AND STEM, REINFORCED FEE SEATS, BLOW-OUT-PROOF STEM, WITH ADJUSTABLE STEM PACKING, SOLDERED OR THREADED ENDS, AND 150 PSIG SWP AND 600-PSIG CWP RATINGS.
4. MANUFACTURERS: APOLLO VALVES; BY CONBRACO INDUSTRIES, INC.; SERIES 70LF-140/240 | HAMMOND VALVE | MILWAUKEE VALVE COMPANY; MODEL UPB0100S/150S | NIBCO INC.; MODELS S-580-70-66-1F7-580-70-66-1F | WATTS WATER TECHNOLOGIES, INC.
C. DRAIN VALVES: BALL-VALVE-TYPE, HOSE-END DRAIN VALVES.
1. BRONZE BALL VALVE AS SPECIFIED IN THIS SECTION. LEAD FREE CONSTRUCTION IS NOT REQUIRED.
2. OUTLET, THREADED, SHORT NIPPLE WITH GARDEN-HOSE THREAD COMPLYING WITH ASME B1.20.7 AND CAP WITH BRASS CHAIN.
D. INSTALL VALVES WITH UNIONS OR FLANGES AT EACH PIECE OF EQUIPMENT ARRANGED TO ALLOW SERVICE, MAINTENANCE, AND EQUIPMENT REMOVAL WITHOUT SYSTEM SHUTDOWN.
E. LOCATE VALVES FOR EASY ACCESS AND PROVIDE SEPARATE SUPPORT WHERE NECESSARY.
F. INSTALL VALVES IN HORIZONTAL PIPING WITH STEM AT OR ABOVE CENTER OF PIPE. BUTTERFLY VALVES SHALL BE INSTALLED WITH STEM HORIZONTAL TO ALLOW SUPPORT FOR THE DISC AND THE CLEANING ACTION OF THE DISC.
G. INSTALL VALVES IN POSITION TO ALLOW FULL STEM MOVEMENT.
H. INSTALL CHECK VALVES FOR PROPER DIRECTION OF FLOW AND AS FOLLOWS:
DOMESTIC WATER PIPING SPECIALTIES
A. REGULATORY REQUIREMENTS: COMPLY WITH REQUIREMENTS IN PUBLIC LAW 111-380, "REDUCTION OF LEAD IN DRINKING WATER ACT," ABOUT LEAD CONTENT IN MATERIALS THAT WILL BE IN CONTACT WITH POTABLE WATER FOR HUMAN CONSUMPTION.
B. MINIMUM WORKING PRESSURE FOR DOMESTIC WATER PIPING SPECIALTIES: 125 PSIG, UNLESS OTHERWISE INDICATED.
C. WATER-TEMPERATURE LIMITING DEVICES:
1. STANDARD: ASSE 1070.
2. PRESSURE RATING: 125 PSIG.
3. TYPE: THERMOSTATICALLY CONTROLLED WATER MIXING VALVE.
4. MATERIAL: BRONZE BODY WITH CORROSION-RESISTANT INTERIOR COMPONENTS.
5. CONNECTIONS: 1/2-INCH UNION OR 3/8-INCH-COMPRESSION; WITH INTEGRAL CHECK VALVES.
6. OUTLET TEMPERATURE RANGE: ADJUSTABLE FROM 85 DEG F TO 120 DEG F. SET AT 105 DEG F.
7. MINIMUM FLOW RATE: 0.5 GPM
8. VALVE FINISH: CHROME PLATED.
9. MANUFACTURERS: APOLLO VALVES; MODEL MVD (34D SERIES) | BRADLEY CORPORATION | LAWLER MANUFACTURING COMPANY, INC. | LEONARD VALVE COMPANY; SERIES 170 AND 270 | WATTS WATER TECHNOLOGIES, INC.; POWERS DIVISION; HYDROGUARD SERIES E480 AND LM495 | WATTS WATER TECHNOLOGIES, INC.; WATTS REGULATOR CO. | ZURN PLUMBING PRODUCTS GROUP; WILKINS DIV.
D. WATER HAMMER ARRESTERS (COPPER TUBE TYPE):
1. STANDARD: ASSE 1010 OR PDI-WH 201.
2. TYPE: COPPER TUBE WITH PISTON.
3. SIZE: ASSE 1010, SIZES AA AND A THROUGH F OR PDI-WH 201, SIZES A THROUGH F.
4. MANUFACTURERS: MFAF, INC. | PFP INC. | SIOUX CHIEF MANUFACTURING COMPANY, INC. | TYLER PIPE; WADE DIV. | WATTS DRAINAGE PRODUCTS INC. | WATTS WATER TECHNOLOGIES, INC.; WATTS REGULATOR CO.

SANITARY WASTE AND VENT PIPING

- A. PIPING SYSTEM MATERIALS ARE SCHEDULED ON THE DRAWINGS.
B. PIPING MATERIALS SHALL BEAR LABEL, STAMP, OR OTHER MARKINGS OF SPECIFIED TESTING AGENCY.
C. CAST-IRON SOIL PIPE SHALL BE MARKED WITH THE COLLECTIVE TRADEMARK OF CAST IRON SOIL PIPE INSTITUTE (CISPI).

- D. COMPLY WITH NSF 14, "PLASTICS PIPING SYSTEMS COMPONENTS AND RELATED MATERIALS," FOR PLASTIC PIPING COMPONENTS. INCLUDE MARKING WITH "NSF-DWV" FOR PLASTIC DRAIN, WASTE, AND VENT PIPING; "NSF-DRAIN" FOR PLASTIC DRAIN PIPING; "NSF-TUBULAR" FOR PLASTIC CONTINUOUS WASTE PIPING; AND "NSF-SEWER" FOR PLASTIC SEWER PIPING.
E. SOILD-WALL PVC PIPE: SCHEDULE 40, ASTM D 2665, DRAIN, WASTE, AND VENT.
1. PVC SOCKET FITTINGS: ASTM D 2865, SOCKET TYPE, MADE TO ASTM D 3311, DRAIN, WASTE, AND VENT PATTERNS AND TO FIT SCHEDULE 40 PIPE.
F. INSTALL SOIL AND WASTE DRAINAGE AND VENT PIPING AT THE FOLLOWING MINIMUM SLOPES, UNLESS OTHERWISE INDICATED:
1. BUILDING SANITARY DRAIN: 1/8-INCH PER FOOT DOWNWARD IN DIRECTION OF FLOW, UNLESS OTHERWISE NOTED.
2. HORIZONTAL SANITARY DRAINAGE PIPING: 1/8-INCH PER FOOT DOWNWARD IN DIRECTION OF FLOW, UNLESS OTHERWISE NOTED.
3. VENT PIPING: 1/8-INCH PER FOOT DOWN TOWARD VERTICAL FIXTURE VENT OR TOWARD VENT STACK.
G. PIPE HANGERS AND SUPPORTS ARE SPECIFIED IN "HANGERS AND SUPPORTS." INSTALL THE FOLLOWING:
1. VERTICAL PIPING: MSS TYPE 8 OR TYPE 42, CLAMPS.
2. INSTALL INDIVIDUAL, STRAIGHT, HORIZONTAL PIPING RUNS ACCORDING TO THE FOLLOWING:
a. 100 FEET AND LESS: MSS TYPE 1, ADJUSTABLE, STEEL CLEVIS HANGERS.
b. LONGER THAN 100 FEET: MSS TYPE 43, ADJUSTABLE ROLLER HANGERS.
c. LONGER THAN 100 FEET, IF INDICATED: MSS TYPE 49, SPRING CUSHION ROLLS.
3. MULTIPLE, STRAIGHT, HORIZONTAL PIPING RUNS 100 FEET OR LONGER: MSS TYPE 44, PIPE ROLLS. SUPPORT PIPE ROLLS ON TRAPEZE.
4. BASE OF VERTICAL PIPING: MSS TYPE 52, SPRING HANGERS.
H. INSTALL SUPPORTS ACCORDING TO "HANGERS AND SUPPORTS."
I. SUPPORT VERTICAL PIPING AND TUBING AT BASE AND AT EACH FLOOR.
J. ROD DIAMETER MAY BE REDUCED 1 SIZE FOR DOUBLE-ROD HANGERS, WITH 3/8-INCH MINIMUM RODS.
K. INSTALL HANGERS FOR CAST-IRON SOIL PIPING WITH THE FOLLOWING MAXIMUM HORIZONTAL SPACING AND MINIMUM ROD DIAMETERS:
1. NPS 1-1/2 AND NPS 2: 60 INCHES WITH 3/8-INCH ROD.
2. NPS 3: 60 INCHES WITH 1/2-INCH ROD.
3. NPS 4 AND NPS 5: 60 INCHES WITH 5/8-INCH ROD.
4. NPS 6: 60 INCHES WITH 3/4-INCH ROD.
5. NPS 8 TO NPS 12: 60 INCHES WITH 7/8-INCH ROD.
L. INSTALL SUPPORTS FOR VERTICAL CAST-IRON SOIL PIPING EVERY 15 FEET.
M. TEST SANITARY DRAINAGE AND VENT PIPING ACCORDING TO PROCEDURES OF AUTHORITIES HAVING JURISDICTION OR, IN ABSENCE OF PUBLISHED PROCEDURES, AS FOLLOWS:
1. TEST FOR LEAKS AND DEFECTS IN NEW PIPING AND PARTS OF EXISTING PIPING THAT HAVE BEEN ALTERED, EXTENDED, OR REPAIRED. IF TESTING IS PERFORMED IN SEGMENTS, SUBMIT SEPARATE REPORT FOR EACH TEST, COMPLETE WITH DIAGRAM OF PORTION OF PIPING TESTED.
2. ROUGH-IN PLUMBING TEST PROCEDURE: TEST DRAINAGE AND VENT PIPING, EXCEPT OUTSIDE LEADERS, ON COMPLETION OF ROUGH-IN. CLOSE OPENINGS IN PIPING SYSTEM AND FILL WITH WATER TO POINT OF OVERFLOW, BUT NOT LESS THAN 10-FOOT HEAD OF WATER. FROM 15 MINUTES BEFORE INSPECTION STARTS TO COMPLETION OF INSPECTION, WATER LEVEL MUST NOT DROP. INSPECT JOINTS FOR LEAKS.
3. FINISHED PLUMBING TEST PROCEDURE: AFTER PLUMBING FIXTURES HAVE BEEN SET AND TRAPS FILLED WITH WATER, TEST CONNECTIONS AND PROVE THEY ARE GASTIGHT AND WATERTIGHT. PLUG VENT-STACK OPENINGS ON ROOF AND BUILDING DRAINS WHERE THEY LEAVE BUILDING. INTRODUCE AIR INTO PIPING SYSTEM EQUAL TO PRESSURE OF 1-INCH WG. USE U-TUBE OR MANOMETER INSERTED IN TRAP OF WATER CLOSET TO MEASURE THIS PRESSURE. AIR PRESSURE MUST REMAIN CONSTANT WITHOUT INTRODUCING ADDITIONAL AIR THROUGHOUT PERIOD OF INSPECTION. INSPECT PLUMBING FIXTURE CONNECTIONS FOR GAS AND WATER LEAKS.
4. REPAIR LEAKS AND DEFECTS WITH NEW MATERIALS AND RETEST PIPING, OR PORTION THEREOF, UNTIL SATISFACTORY RESULTS ARE OBTAINED.
5. PREPARE REPORTS FOR TESTS AND REQUIRED CORRECTIVE ACTION.

PLUMBING FIXTURES

- A. SELECT COMBINATIONS OF FIXTURES AND TRIM, FAUCETS, FITTINGS, AND OTHER COMPONENTS THAT ARE COMPATIBLE.
B. REGULATORY REQUIREMENTS: COMPLY WITH REQUIREMENTS IN ICC A117.1, "ACCESSIBLE AND USABLE BUILDINGS AND FACILITIES" FOR PLUMBING FIXTURES FOR PEOPLE WITH DISABILITIES.
C. REGULATORY REQUIREMENTS: COMPLY WITH REQUIREMENTS IN PUBLIC LAW 102-486, "ENERGY POLICY ACT," ABOUT WATER FLOW AND CONSUMPTION RATES FOR PLUMBING FIXTURES.
D. REGULATORY REQUIREMENTS: COMPLY WITH REQUIREMENTS IN PUBLIC LAW 111-380, "REDUCTION OF LEAD IN DRINKING WATER ACT," ABOUT LEAD CONTENT IN MATERIALS THAT WILL BE IN CONTACT WITH POTABLE WATER FOR HUMAN CONSUMPTION.
E. ACCEPTABLE PLUMBING FIXTURES ARE SCHEDULED ON THE DRAWINGS.
F. FIXTURE SUPPLIES: CHROME-PLATED BRASS, LOOSE-KEY OR SCREWDRIVER ANGLE STOPS WITH BRASS STEMS, CHROME-PLATED COPPER RISERS, AND CHROME-PLATED WALL FLANGES.
1. MANUFACTURERS: BRASSCRAFT; A MASCO COMPANY | MCGUIRE MFG. CO., INC. | ANY OF THE APPROVED PLUMBING FIXTURE MANUFACTURERS.
G. PROTECTIVE SHIELDING PIPE COVERS (PSG-1): MANUFACTURED PLASTIC WRAPS FOR COVERING PLUMBING FIXTURE HOT- AND COLD-WATER SUPPLIES AND TRAP AND DRAIN PIPING. COMPLY WITH AMERICANS WITH DISABILITIES ACT (ADA) REQUIREMENTS.
1. MANUFACTURERS: ENGINEERED BRASS CO. | INSUL-TECT PRODUCTS CO.; A SUBSIDIARY OF MVG MOLEDED PRODUCTS | MCGUIRE MANUFACTURING CO., INC. | PLUMBEREX SPECIALTY PRODUCTS INC. | TCI PRODUCTS; SG-2008V | TRUERO, INC. | ZURN PLUMBING PRODUCTS GROUP; TUBULAR BRASS PLUMBING PRODUCTS OPERATION.
H. FIXTURE SUPPORTS:
1. MANUFACTURERS: JOSAM COMPANY | MIFAB MANUFACTURING INC. | SMITH, JAY R. MFG. CO. | TYLER PIPE; WADE DIV. | WATTS DRAINAGE PRODUCTS INC.; A DIV. OF WATTS INDUSTRIES, INC. | ZURN PLUMBING PRODUCTS GROUP; SPECIFICATION DRAINAGE OPERATION.

METAL DUCTS

- A. SHEET METAL MATERIALS: COMPLY WITH REQUIREMENTS IN SMACNA'S "HVAC DUCT CONSTRUCTION STANDARDS"—METAL AND FLEXIBLE—for ACCEPTABLE MATERIALS, MATERIAL THICKNESSES, AND DUCT CONSTRUCTION METHODS, UNLESS OTHERWISE INDICATED. SHEET METAL MATERIALS SHALL BE FREE OF PITTING, SEAM MARKS, ROLLER MARKS, STAINS, DISCOLORATIONS, AND OTHER IMPERFECTIONS.
1. GALVANIZED SHEET STEEL: LOCK-FORMING QUALITY; COMPLYING WITH ASTM A 653/A 653M AND HAVING G90 COATING DESIGNATION; DUCTS SHALL HAVE MILL-PHOSPHATIZED FINISH FOR SURFACES EXPOSED TO VIEW.
2. REINFORCEMENT SHAPES AND PLATES: GALVANIZED-STEEL REINFORCEMENT WHERE INSTALLED ON GALVANIZED SHEET METAL DUCTS.
B. SEALANT MATERIALS:
1. JOINT AND SEAM SEALANTS, GENERAL: THE TERM "SEALANT" IS NOT LIMITED SOLELY TO MATERIALS OF MASTIC NATURE. BUT ALSO INCLUDES TWO-PART ADHESIVE/OPEN-WEAVE FABRIC STRIP SYSTEMS, AND ELASTOMERIC SEALANT TAPE.
2. ELASTOMERIC SEALANT TAPE: 3 INCHES WIDE; MODIFIED BUTYL ADHESIVE BACKED.
a. MANUFACTURERS: HARDCAST; FOIL-GRIP 1402 AND FOIL-GRIP 1402-1819FX.
3. WATER-BASED JOINT AND SEAM SEALANT: FLEXIBLE, MASTIC SEALANT, RESISTANT TO UV LIGHT WHEN CURED, UL 723 LISTED, AND COMPLYING WITH NFPA REQUIREMENTS FOR CLASS 1 DUCTS.
a. MANUFACTURERS: HARDCAST; FLEX-GRIP 550 AND VERSA-GRIP 181 | POLYMER ADHESIVES; NO. 11 | UNITED MCGILL.
4. FLANGED JOINT MASTIC: ONE-PART, ACID-CURING, ELASTOMERIC JOINT SEALANT COMPLYING WITH ASTM C 920, TYPE S, GRADE NS, CLASS 25, USE O.
5. GASKETS: CHLOROPRENE ELASTOMER, 40 DUROMETER, 1/8 INCH THICK, FULL FACE, ONE PIECE VULCANIZED OR DOWETAILED AT JOINTS.
C. HANGERS AND SUPPORTS:
1. BUILDING ATTACHMENTS: CONCRETE INSERTS, OR STRUCTURAL-STEEL FASTENERS APPROPRIATE FOR CONSTRUCTION MATERIALS TO WHICH HANGERS ARE BEING ATTACHED.
2. HANGER MATERIALS: GALVANIZED SHEET STEEL OR THREADED STEEL ROD.
3. DUCT ATTACHMENTS: SHEET METAL SCREWS, BLIND RIVETS, OR SELF-TAPPING METAL SCREWS; COMPATIBLE WITH DUCT MATERIALS. ATTACHMENTS FOR STAINLESS STEEL AND PVC-COATED DUCT SHALL BE STAINLESS STEEL.
4. TRAPEZE AND RISER SUPPORTS: STEEL SHAPES COMPLYING WITH ASTM A 36/A 36M.
5. LOAD RATED CABLE SUSPENSION SYSTEM: TESTED TO FIVE TIMES THE SAFE WORKING LOADS AND VERIFIED BY THE SMACNA TESTING AND RESEARCH INSTITUTE.
a. MANUFACTURERS: DUCTMATE INDUSTRIES, INC., CLUTCHER AND EZ-LOCK | DURO DYNE CORP., DYNA-TITE SYSTEM | GRIPPLE INC., HANG-FAST SYSTEM.
6. WELDED SUPPORTS: STRUCTURAL STEEL SHAPES WITH ZINC RICH PAINT. EQUIVALENT, PROPRIETARY DESIGN ROLLED STEEL STRUCTURAL SUPPORT SYSTEMS MAY BE USED IN LIEU OF MILL ROLLED STRUCTURAL STEEL.
D. RECTANGULAR DUCT FABRICATION: FABRICATE DUCTS, ELBOWS, TRANSITIONS, OFFSETS, BRANCH CONNECTIONS, AND OTHER CONSTRUCTION ACCORDING TO SMACNA'S "HVAC DUCT CONSTRUCTION STANDARDS"—METAL AND FLEXIBLE—AND COMPLYING WITH REQUIREMENTS FOR METAL THICKNESS, REINFORCING TYPES AND INTERVALS, TIE-ROD APPLICATIONS, AND JOINT TYPES AND INTERVALS.
E. ROUND AND FLAT-OVAL DUCT AND FITTING FABRICATION:
1. DIAMETER AS APPLIED TO FLAT-OVAL DUCTS IN THIS ARTICLE IS THE DIAMETER OF A ROUND DUCT WITH A CIRCUMFERENCE EQUAL TO THE PERIMETER OF A GIVEN SIZE OF FLAT-OVAL DUCT.



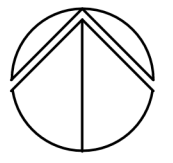
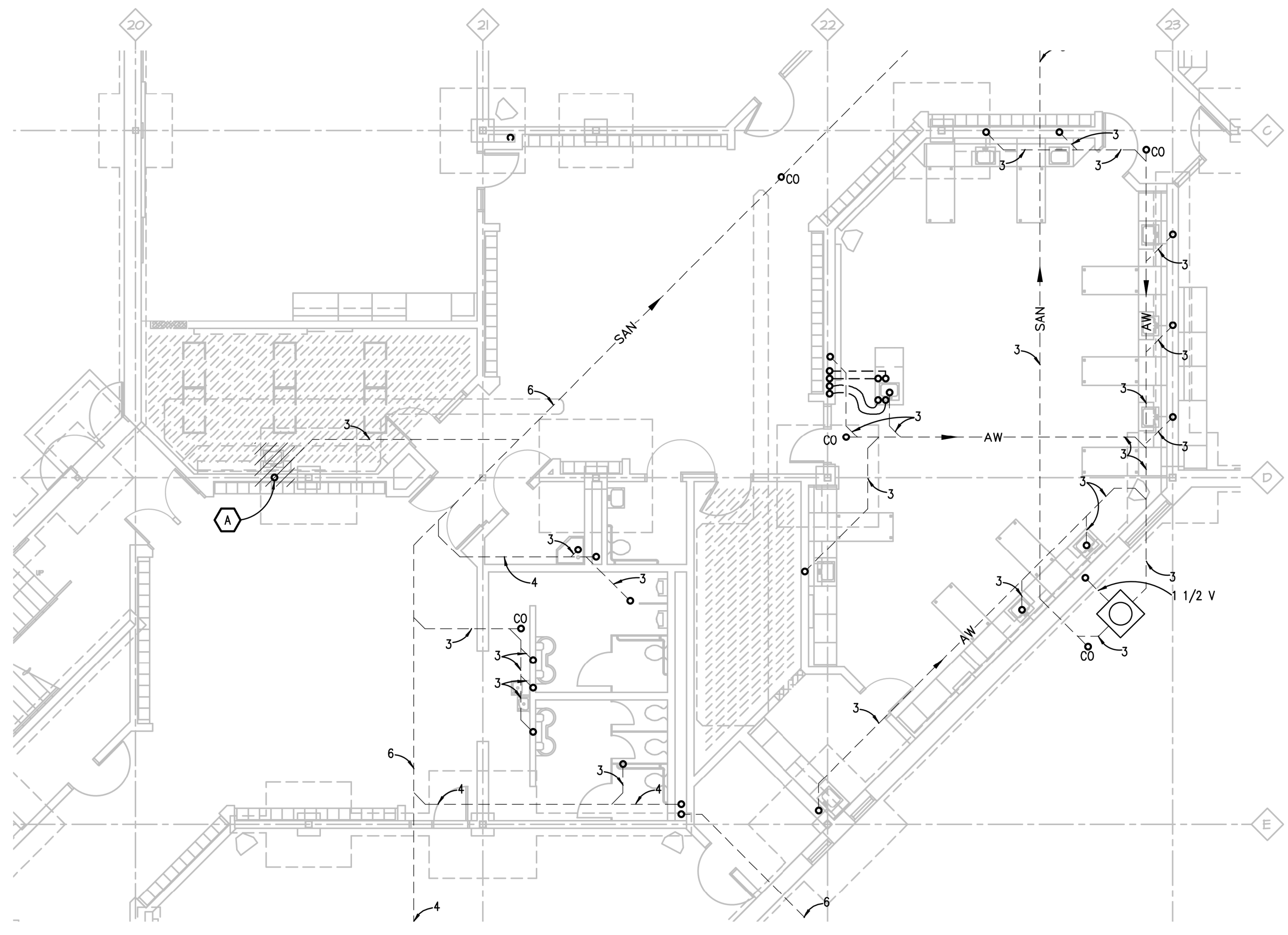
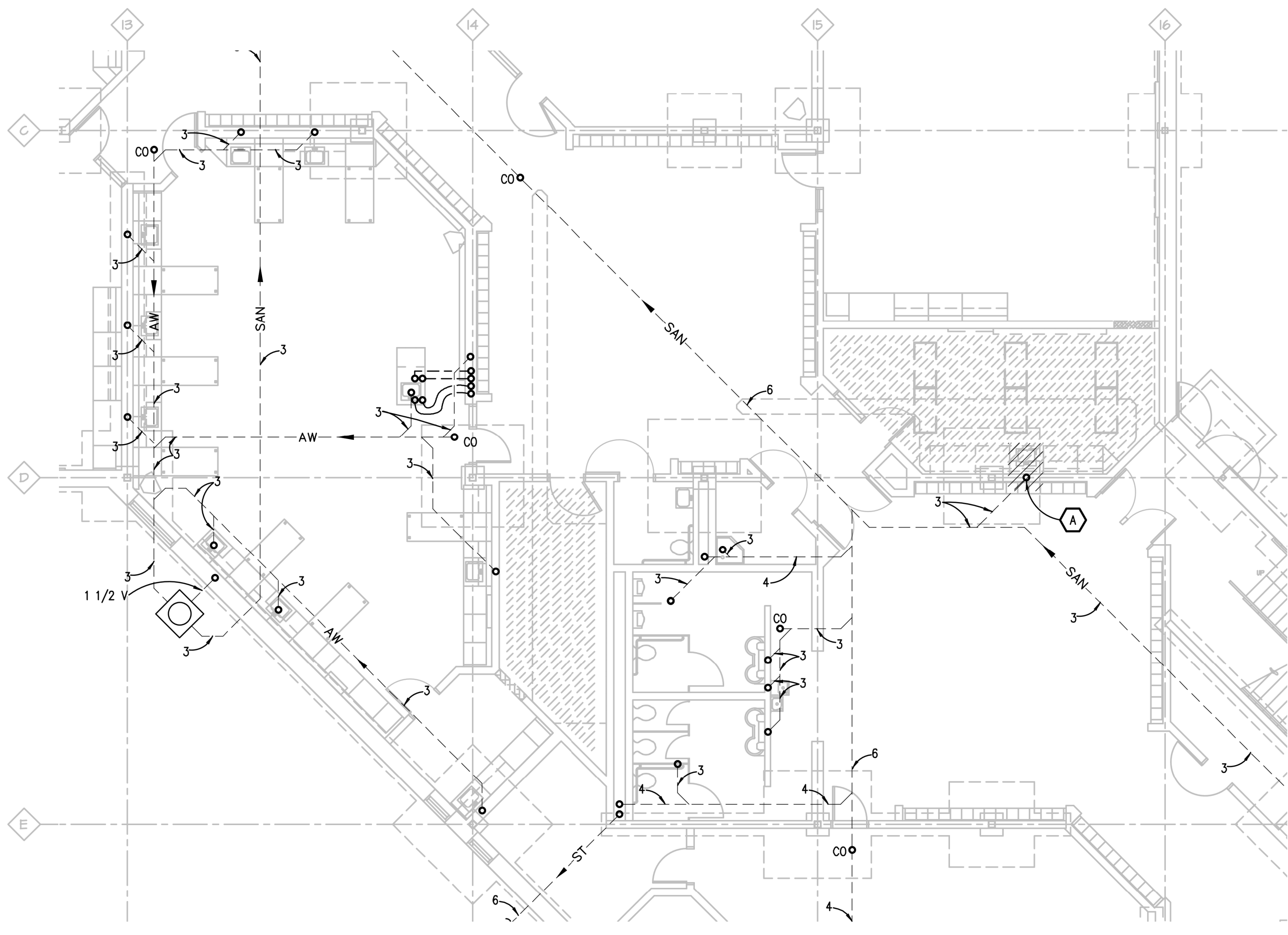
DATE SIGNED: 08-26-2019



Peter Basso Associates Inc. CONSULTING ENGINEERS

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Troy, Michigan 48068-327

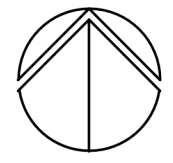
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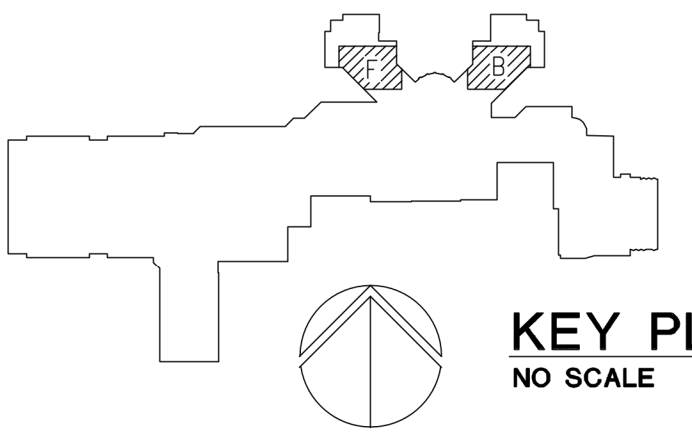
AREA F
UNDERGROUND PLUMBING PLAN
 SCALE: 1/8" = 1' - 0"

MECHANICAL GENERAL DEMOLITION NOTES: **DEMOLITION KEY NOTES:**

- | | |
|---|---|
| <ol style="list-style-type: none"> 1. ANY INTERRUPTION OF EXISTING SERVICES AND/OR EQUIPMENT SHALL BE PERFORMED AT A TIME APPROVED IN ADVANCE BY THE OWNER'S REPRESENTATIVE. 2. THESE DRAWINGS ARE DIAGRAMMATIC AND INDICATE THE GENERAL EXTENT OF THE WORK. ACTUAL ROUTING AND SIZES OF EXISTING PIPING AND DUCTWORK MIGHT DIFFER TO A LIMITED EXTENT FROM WHAT IS SHOWN. MAJOR DISCREPANCIES BETWEEN THE DRAWINGS AND ACTUAL EXISTING CONDITIONS SHALL BE REPORTED TO THE ENGINEER. 3. THE EXACT EXTENT OF DEMOLITION SHALL BE AS REQUIRED BY THE NEW WORK. 4. ALL MECHANICAL ITEMS TO BE REMOVED SHALL BE REMOVED COMPLETE, INCLUDING ALL RELATED ITEMS SUCH AS HANGERS, SUPPORTS, CONTROLS, ETC. CAP ALL OPEN ENDED PIPES AND DUCTWORK. | <ol style="list-style-type: none"> A. CAP SANITARY PIPING IN CONCEALED MANNER. B. CAP CW, HW, SAN, AND G PIPING WITHIN CASEWORK. C. CLOSE MASTER GAS VALVE AND REMOVE VALVE HANDLE. TURN HANDLE OVER TO OWNER. |
|---|---|



AREA B
UNDERGROUND PLUMBING PLAN
 SCALE: 1/8" = 1' - 0"



KEY PLAN
 NO SCALE



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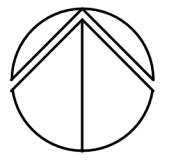
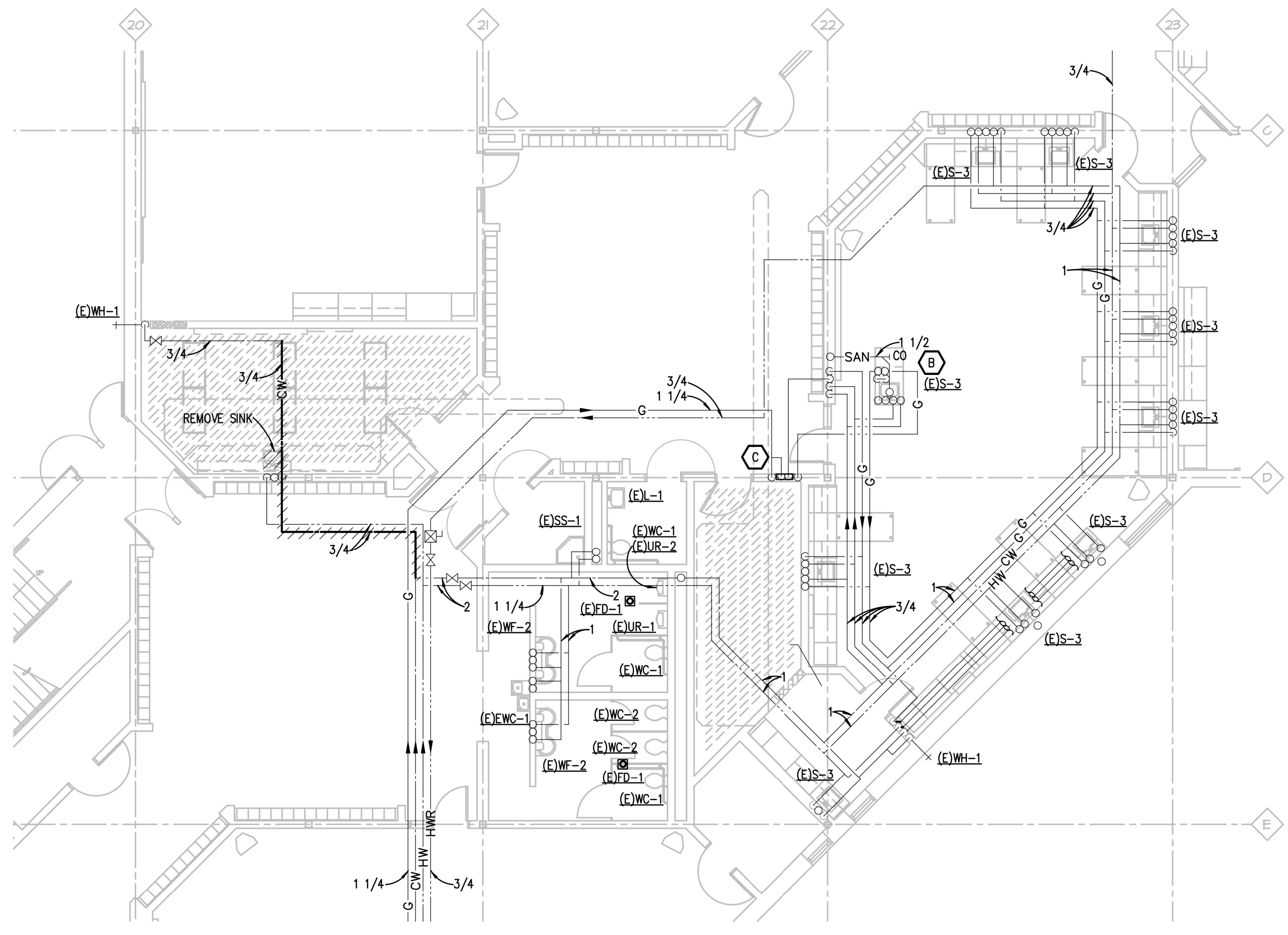
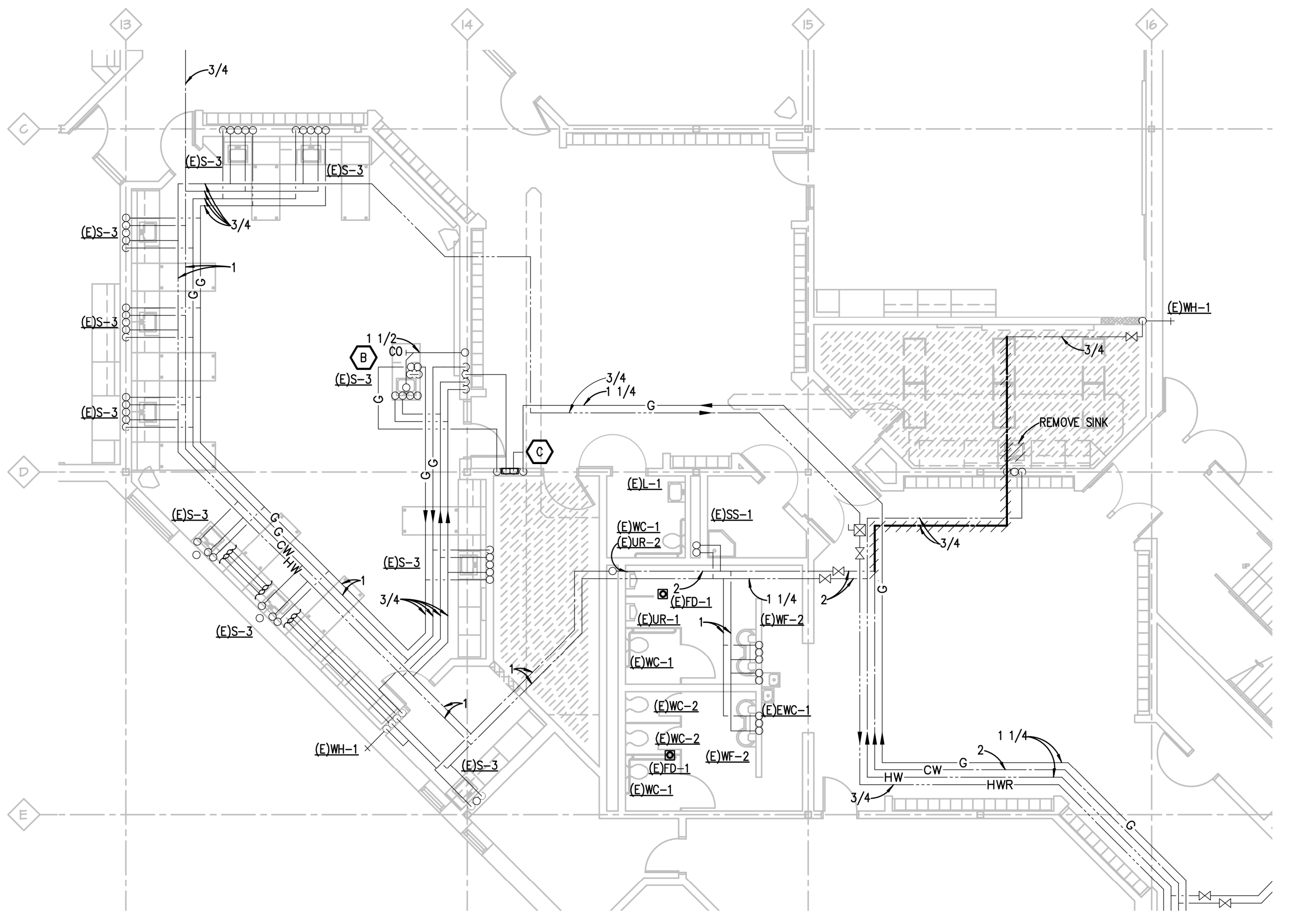
Date:	08-26-19
Issued For:	Construction

Willow Run Middle School
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 Ypsilanti MI 48198
 Project Number: 1916

UNDERGROUND PLUMBING
 PLAN

MD2.0

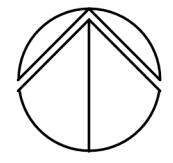
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AREA F
FIRST FLOOR PLUMBING DEMOLITION PLAN
 SCALE: 1/8" = 1' - 0"

MECHANICAL GENERAL DEMOLITION NOTES: **DEMOLITION KEY NOTES:**

1. ANY INTERRUPTION OF EXISTING SERVICES AND/OR EQUIPMENT SHALL BE PERFORMED AT A TIME APPROVED IN ADVANCE BY THE OWNER'S REPRESENTATIVE.
 2. THESE DRAWINGS ARE DIAGRAMMATIC AND INDICATE THE GENERAL EXTENT OF THE WORK. ACTUAL ROUTING AND SIZES OF EXISTING PIPING AND DUCTWORK MIGHT DIFFER TO A LIMITED EXTENT FROM WHAT IS SHOWN. MAJOR DISCREPANCIES BETWEEN THE DRAWINGS AND ACTUAL EXISTING CONDITIONS SHALL BE REPORTED TO THE ENGINEER.
 3. THE EXACT EXTENT OF DEMOLITION SHALL BE AS REQUIRED BY THE NEW WORK.
 4. ALL MECHANICAL ITEMS TO BE REMOVED SHALL BE REMOVED COMPLETE, INCLUDING ALL RELATED ITEMS SUCH AS HANGERS, SUPPORTS, CONTROLS, ETC. CAP ALL OPEN ENDED PIPES AND DUCTWORK.
- A. CAP SANITARY PIPING IN CONCEALED MANNER.
 - B. CAP CW, HW, SAN, AND G PIPING WITHIN CASEWORK.
 - C. CLOSE MASTER GAS VALVE AND REMOVE VALVE HANDLE. TURN HANDLE OVER TO OWNER.



AREA B
FIRST FLOOR PLUMBING DEMOLITION PLAN
 SCALE: 1/8" = 1' - 0"

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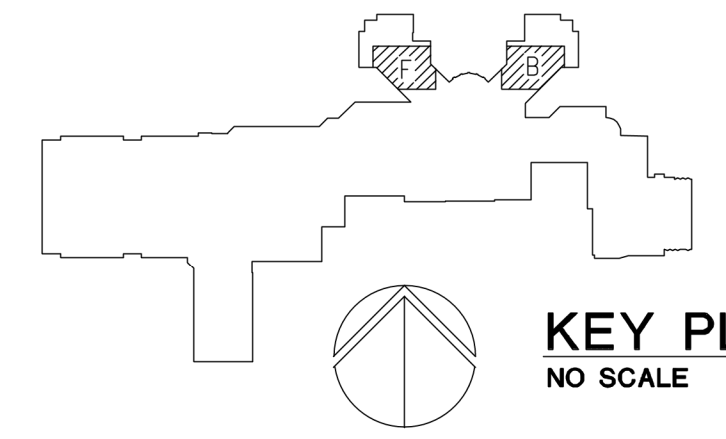
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 734.828.0700 PLYMOUTH, MI 48178

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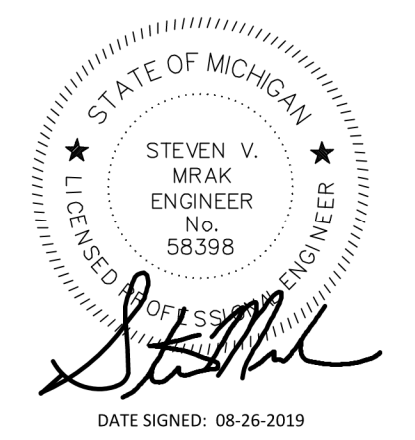
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FIRST FLOOR PLUMBING
 DEMOLITION PLAN

MD2.1

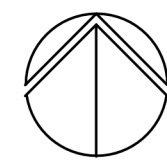
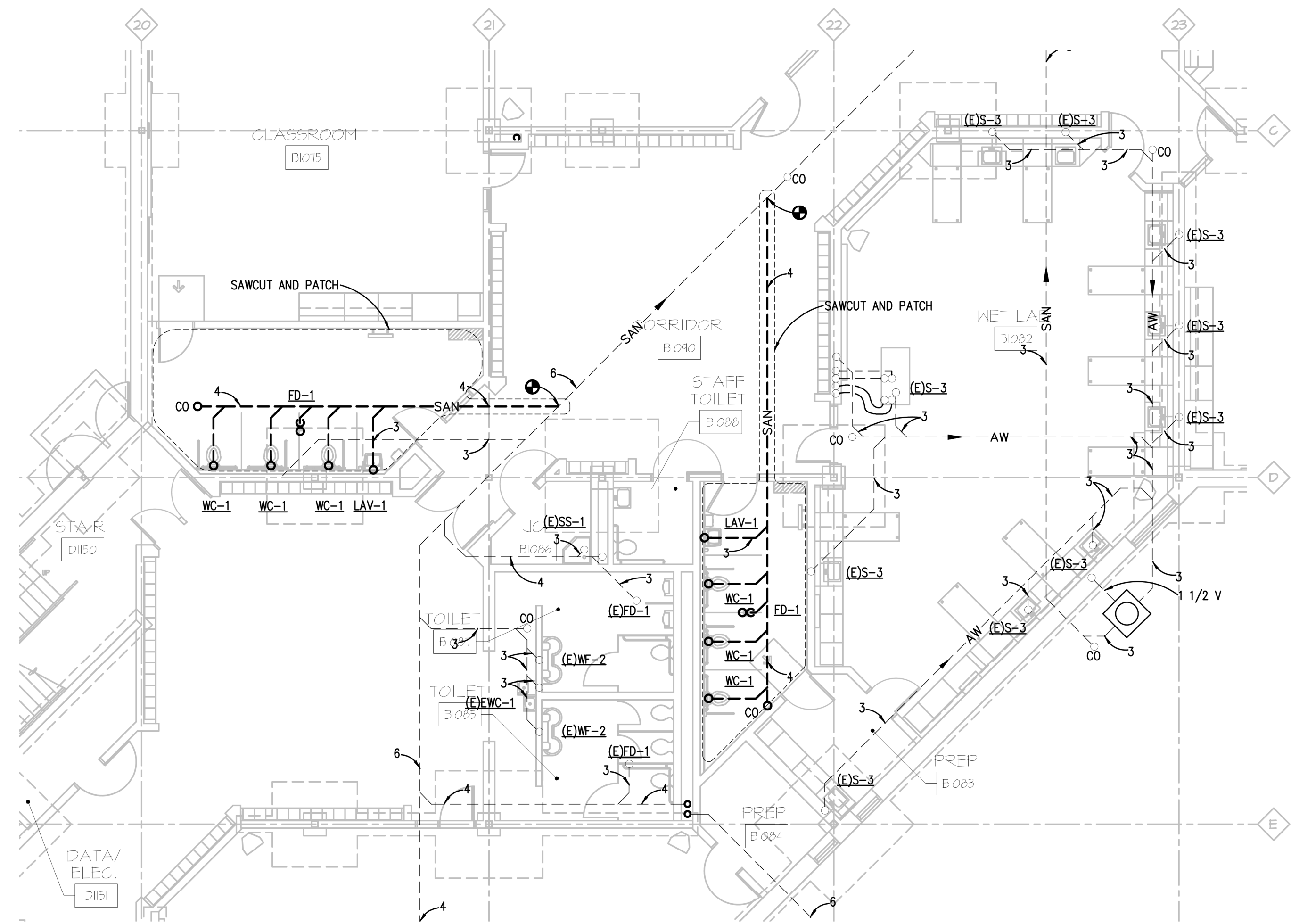
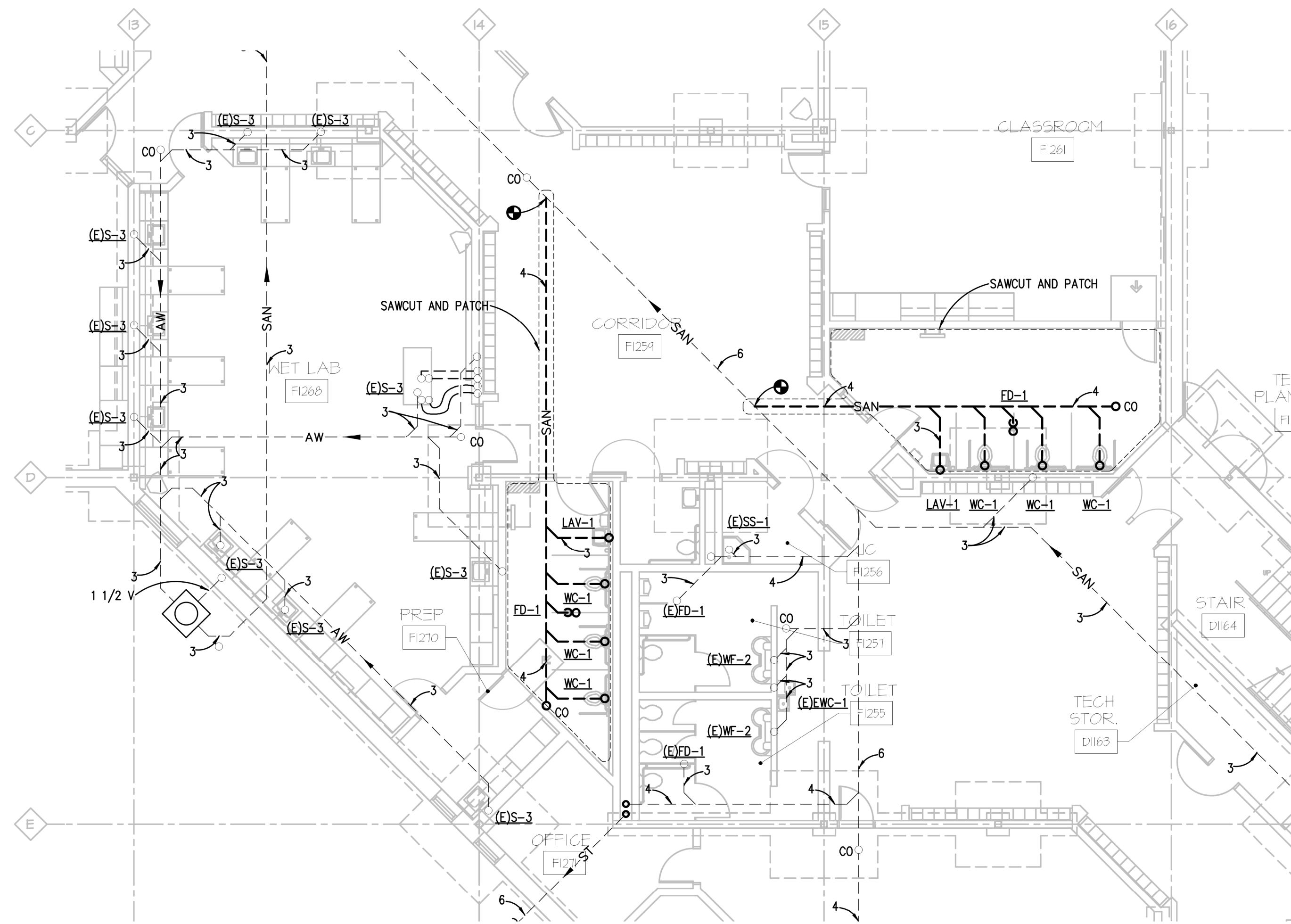
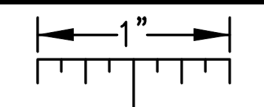


KEY PLAN
 NO SCALE



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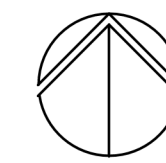
**AREA F
UNDERGROUND PLUMBING PLAN**
SCALE: 1/8" = 1' - 0"

PLUMBING GENERAL NOTES:

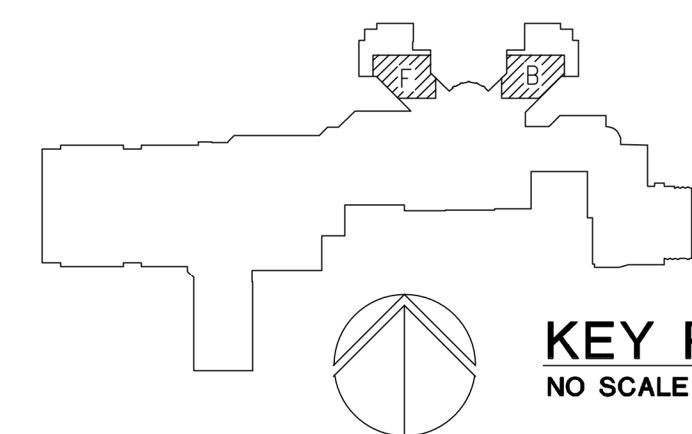
1. THESE DRAWINGS ARE DIAGRAMMATIC, AND REPRESENT THE GENERAL INTENT AND ARRANGEMENT OF SYSTEMS. THEY ARE NOT TO BE CONSIDERED FABRICATION/COORDINATION/SHOP DRAWINGS. COORDINATION WITH OTHER TRADES IS REQUIRED. PROVIDE THE ADDITIONAL FITTINGS AND OFFSETS THAT WILL BE REQUIRED TO COMPLETE EACH SYSTEM AND TO AVOID INTERFERENCES WITH ALL OTHER SYSTEMS INCLUDING THE STRUCTURE, SHEET METAL, OTHER PIPING SYSTEMS, ELECTRICAL CONDUITS, BUS DUCTS, CABLE TRAY, LIGHT FIXTURES, ETC. AND/OR OTHER SPACE CONSTRAINTS.
2. INSTALL SYSTEMS SUCH THAT REQUIRED CLEARANCE AND SERVICE ACCESS SPACE IS PROVIDED AROUND ALL MECHANICAL AND ELECTRICAL EQUIPMENT, AND AROUND ANY COMPONENTS WHICH REQUIRE SERVICE ACCESS.
3. PIPING SHALL NOT BE INSTALLED ABOVE ELECTRICAL TRANSFORMERS, SWITCHBOARDS, PANELBOARDS OR MOTOR CONTROL CENTERS.
4. COORDINATE AND PROVIDE ACCESS DOORS WITHIN INACCESSIBLE CEILING, SHAFT, AND CHASE AREAS FOR ALL COMPONENTS WHICH REQUIRE SERVICE ACCESS. REFER TO ARCHITECTURAL DRAWINGS FOR CEILING TYPES.
5. PROVIDE SUPPLEMENTARY STEEL AS REQUIRED FOR THE PROPER SUPPORT OF ALL SYSTEMS.
6. REFER TO ARCHITECTURAL PLANS FOR DIMENSIONED LOCATIONS OF PLUMBING FIXTURES.
7. HOT AND COLD WATER PIPING RUN-OUTS TO LAVATORIES AND SINKS SHALL BE 1/2" UNLESS OTHERWISE NOTED.
8. PLUMBING VENT PIPING THROUGH ROOF SHALL BE LOCATED A MINIMUM OF 10'-0" FROM ANY FRESH AIR INTAKE LOCATION AND A MINIMUM OF 18" CLEAR FROM THE INSIDE FACE OF PARAPET.
9. PROVIDE CODE REQUIRED CLEARANCE FOR ALL CLEANOUTS INSTALLED IN SANITARY WASTE AND VENT PIPING.
10. MINIMUM UNDERGROUND PIPE SIZE SHALL BE 3".
11. WATER SERVICE ENTRANCE PIPING SHALL BE BURIED WITH DEPTH OF COVER OVER TOP OF PIPE OF AT LEAST 48" OR WITH TOP OF PIPE AT LEAST 12" BELOW LEVEL OF MAXIMUM FROST PENETRATION, OR AS REQUIRED BY AUTHORITIES HAVING JURISDICTION, WHICHEVER IS DEEPEST.

CONSTRUCTION KEY NOTES:

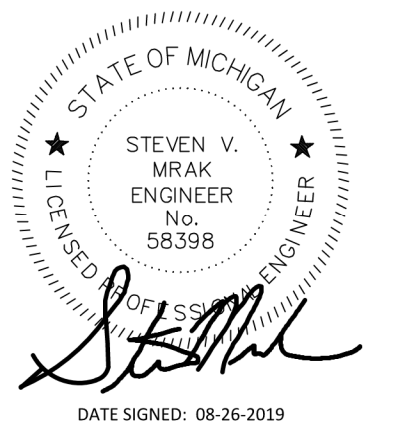
1. EXTEND HW AND HWR PIPING TO NEW LAV-1.
2. CONNECT VENT TO EXISTING VIR.



**AREA B
UNDERGROUND PLUMBING PLAN**
SCALE: 1/8" = 1' - 0"



KEY PLAN
NO SCALE



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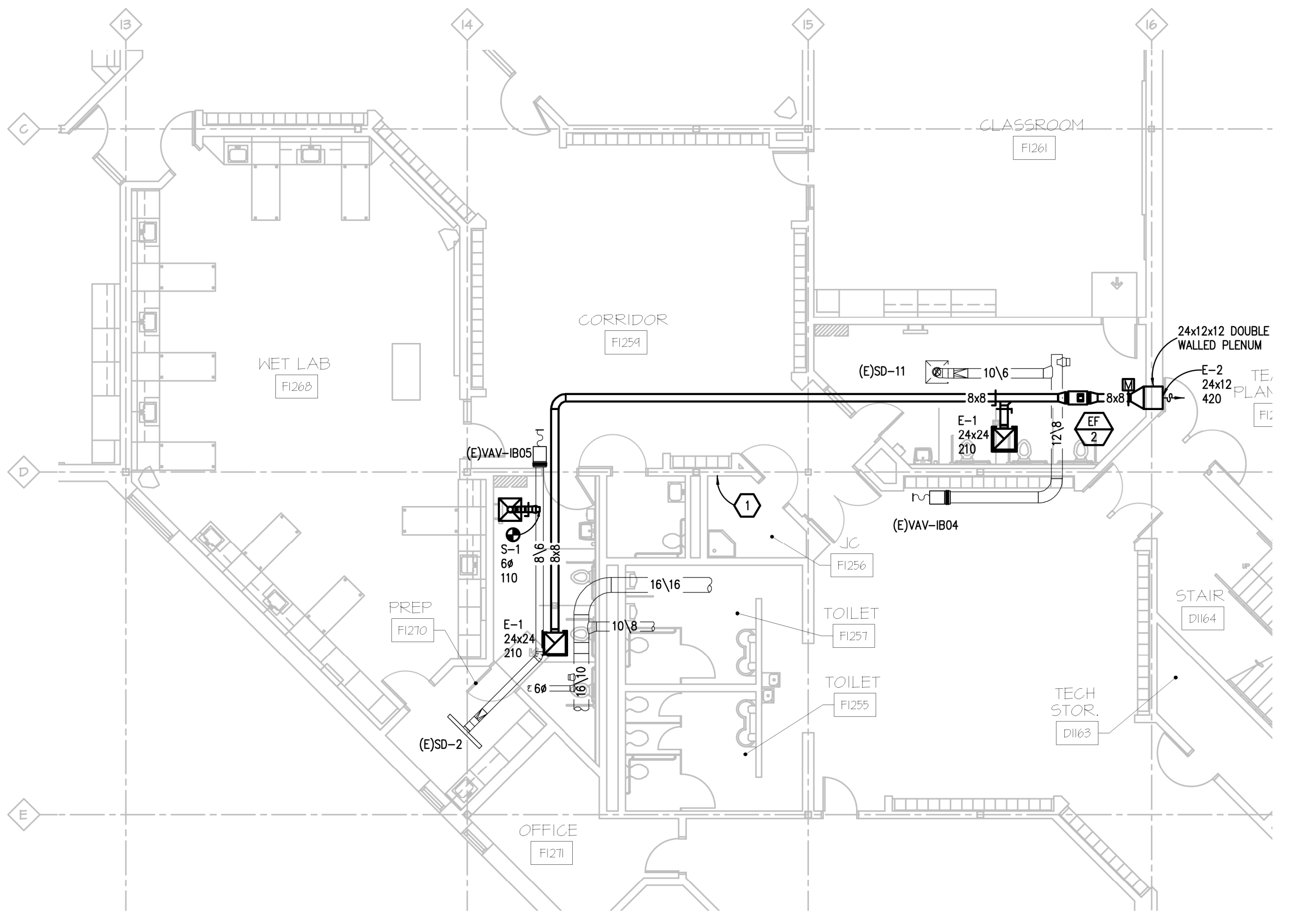
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11300 E. Grand Ave., Suite 200
Troy, MI 48068

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Project Number: 1916

**UNDERGROUND PLUMBING
PLAN**

M2.0

THE FOLLOWING DIMENSION EQUALS ONE INCH WHEN PRINTED TO SCALE.



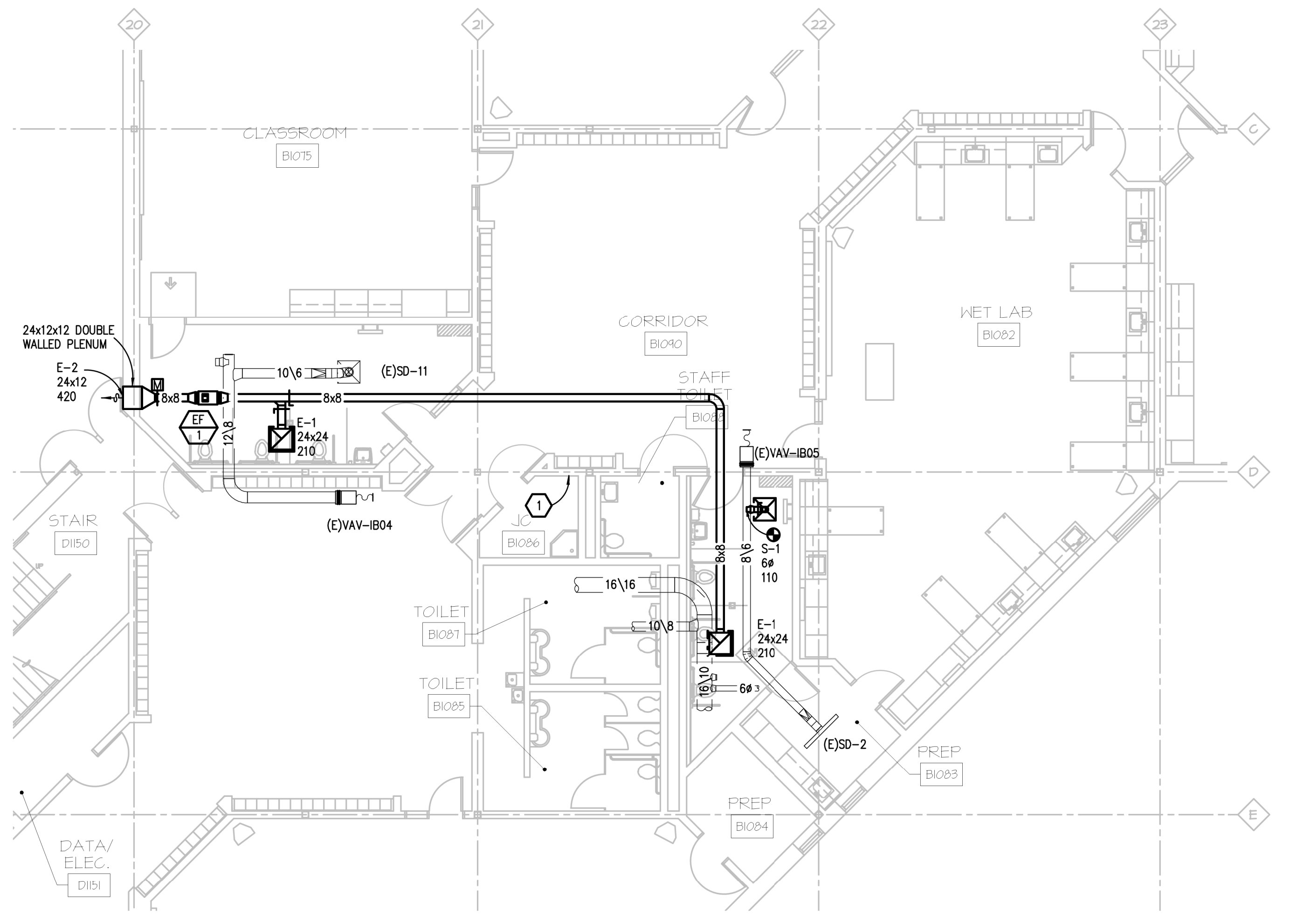
AREA F
FIRST FLOOR SHEET METAL PLAN
 SCALE: 1/8" = 1' - 0"

SHEET METAL GENERAL NOTES:

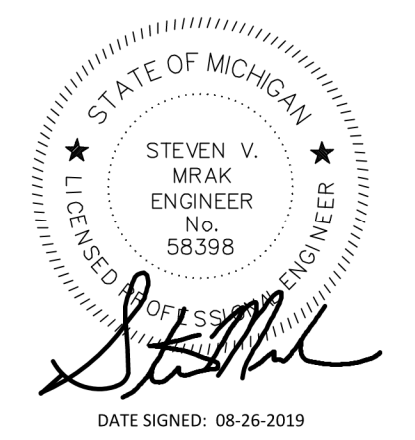
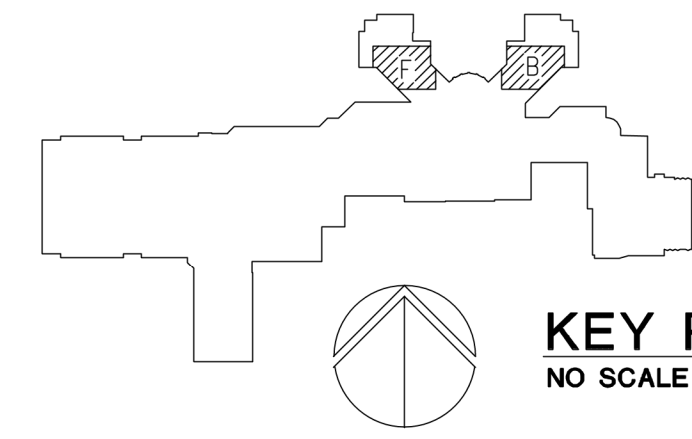
1. THESE DRAWINGS ARE DIAGRAMMATIC, AND REPRESENT THE GENERAL INTENT AND ARRANGEMENT OF SYSTEMS. THEY ARE NOT TO BE CONSIDERED FABRICATION/COORDINATION/SHOP DRAWINGS. COORDINATION WITH OTHER TRADES IS REQUIRED. PROVIDE THE ADDITIONAL FITTINGS AND OFFSETS THAT WILL BE REQUIRED TO COMPLETE EACH SYSTEM AND TO AVOID INTERFERENCES WITH ALL OTHER SYSTEMS INCLUDING THE STRUCTURE, PIPING SYSTEMS, ELECTRICAL CONDUITS, BUS DUCTS, CABLE TRAY, LIGHT FIXTURES, ETC. AND/OR OTHER SPACE CONSTRAINTS.
2. INSTALL SYSTEMS SUCH THAT REQUIRED CLEARANCE AND SERVICE ACCESS SPACE IS PROVIDED AROUND ALL MECHANICAL AND ELECTRICAL EQUIPMENT, AND AROUND ANY COMPONENTS WHICH REQUIRE SERVICE ACCESS.
3. PIPING AND DUCTWORK SHALL NOT BE INSTALLED ABOVE ELECTRICAL TRANSFORMERS, SWITCHBOARDS, PANELBOARDS OR MOTOR CONTROL CENTERS.
4. COORDINATE AND PROVIDE ACCESS DOORS WITHIN INACCESSIBLE CEILING, SHAFT, AND CHASE AREAS FOR ALL COMPONENTS WHICH REQUIRE SERVICE ACCESS. REFER TO ARCHITECTURAL DRAWINGS FOR CEILING TYPES.
5. PROVIDE SUPPLEMENTARY STEEL AS REQUIRED FOR THE PROPER SUPPORT OF ALL SYSTEMS.
6. REFER TO ARCHITECTURAL REFLECTED CEILING PLANS FOR DIMENSIONED LOCATION OF GRILLES, REGISTERS, AND DIFFUSERS.

CONSTRUCTION KEY NOTES:

1. PROVIDE PROGRAMMABLE TIME CLOCK FOR FAN CONTROL.



AREA B
FIRST FLOOR SHEET METAL PLAN
 SCALE: 1/8" = 1' - 0"



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Date:	08-26-19
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Willow Run Middle School
 235 Spencer Ln
 Ypsilanti MI 48198
 Project Number: 1916

FIRST FLOOR SHEET METAL PLAN

M4.1

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ABOVEGROUND PLUMBING PIPE & ACCESSORY INSULATION APPLICATION SCHEDULE

	INSULATION MATERIAL & THICKNESS (INCHES)										FIELD-APPLIED JACKET MATERIAL			KEYED NOTES
	FLEXIBLE ELASTOMERIC	FIBERGLASS	MINERAL WOOL	POLYISOCYANURATE	PHENOLIC	CELLULAR GLASS	CALCIUM SILICATE	ALUMINUM	STAINLESS STEEL	PVC	SELF-ADHESIVE (FOR OUTDOOR APPLICATIONS)	P/DC (INDOOR)	P/DC (OUTDOOR)	
INDOOR PIPE SYSTEM AND SIZE (INCHES)														
DOMESTIC COLD WATER	1	1						X	X					A
DOMESTIC HOT WATER SUPPLY & RETURN 140 DEG F AND LESS:														
NPS 1-1/4 AND SMALLER	1	1						X	X					A
NPS 1-1/2 AND LARGER	1.5	1.5						X	X					A

UNLESS OTHERWISE INDICATED OR SCHEDULED, DO NOT INSULATE THE FOLLOWING:

- FIRE SUPPRESSION PIPING
- UNDERGROUND PIPING
- LABORATORY GAS AND VACUUM PIPING
- MEDICAL GAS AND VACUUM PIPING
- FUEL GAS PIPING
- FUEL OIL PIPING

GENERAL NOTES

1. "X" OR THICKNESS IN INCHES INDICATES ACCEPTABLE SELECTION. IF MORE THAN ONE SELECTION IS INDICATED FOR A SYSTEM, CONTRACTOR MAY SELECT FROM THOSE INDICATED SELECTIONS.
2. INSULATE PIPING WITHIN AIR HANDLING EQUIPMENT THE SAME AS INDOOR PIPING. PROVIDE ALUMINUM OR STAINLESS STEEL JACKET.

KEYED NOTES

- A. PROVIDE FIELD APPLIED JACKET FOR PIPING EXPOSED IN EQUIPMENT ROOMS, STORAGE ROOMS, JANITORS CLOSETS, RECEIVING ROOMS, TEST AREAS, CIRCULATION AREAS AND SUCH AREAS SUBJECT TO DAMAGE, WITHIN 10 FEET (3 METERS) OF FINISHED FLOOR.
- B. PROVIDE MANUFACTURER'S RECOMMENDED PROTECTIVE COATING FOR FLEXIBLE ELASTOMERIC THERMAL INSULATION.

DUCT SYSTEM INSULATION APPLICATION SCHEDULE

	INSULATION MATERIAL & THICKNESS (INCHES)										FIELD APPLIED JACKET MATERIAL		KEYED NOTES
	FIBERGLASS BLANKET 0.75 LB/00 FT	FIBERGLASS BLANKET 1.0 LB/00 FT	FIBERGLASS BOARD 2.25 LB/00 FT	FIBERGLASS BOARD 6.0 LB/00 FT	FLEXIBLE ELASTOMERIC	ASTM E2336 2-HOUR FIRE RATED BLANKET	2-HOUR FIRE RATED BLANKET	ALUMINUM	SELF-ADHESIVE (FOR OUTDOOR APPLICATIONS)				
DUCT SYSTEMS LOCATED INDOORS													
EXHAUST AND RELIEF AIR BETWEEN ISOLATION DAMPER AND PENETRATION OF BUILDING EXTERIOR, EXCEPT AS NOTED BELOW	1.5												
RECTANGULAR EXHAUST AND RELIEF AIR BETWEEN ISOLATION DAMPER AND PENETRATION OF BUILDING EXTERIOR, IN MECHANICAL ROOMS		1.5											
ROUND & FLAT OVAL EXHAUST AND RELIEF AIR BETWEEN ISOLATION DAMPER AND PENETRATION OF BUILDING EXTERIOR, IN MECHANICAL ROOMS	1.5												
LOCKER ROOM AND WET AREA EXHAUST BETWEEN EXHAUST GRILLE & CONNECTION TO GENERAL EXHAUST OR BETWEEN EXHAUST GRILLE AND PENETRATION OF BUILDING EXTERIOR	1.5												

PLENUMS, DUCTS, AND DUCT ACCESSORIES NOT REQUIRING INSULATION:

- FIBROUS-GLASS DUCTS
- DOUBLE-WALL METAL DUCTS WITH INSULATION OF SUFFICIENT THICKNESS TO COMPLY WITH ENERGY CODE AND ASHRAE/IESNA 90.1 - 2013
- METAL DUCTS WITH DUCT LINER OF SUFFICIENT THICKNESS TO COMPLY WITH ENERGY CODE AND ASHRAE/IESNA 90.1 - 2013
- FABRIC SUPPLY DUCTS
- FACTORY-INSULATED FLEXIBLE DUCTS
- FACTORY-INSULATED PLENUMS AND CASINGS
- FLEXIBLE CONNECTORS
- VIBRATION-CONTROL DEVICES
- FACTORY-INSULATED ACCESS PANELS AND DOORS

GENERAL NOTES

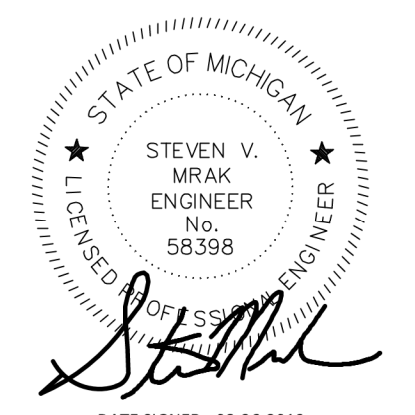
1. "X" OR THICKNESS IN INCHES INDICATE ACCEPTABLE SELECTION. IF MORE THAN ONE SELECTION IS INDICATED FOR A DUCT SYSTEM, CONTRACTOR MAY SELECT FROM THOSE INDICATED SELECTIONS.
2. REFER TO METAL DUCT SECTION OF SPECIFICATIONS FOR DUCT LINING AND DOUBLE-WALL INSULATED DUCT.
3. REFER TO HVAC CASINGS SECTION OF SPECIFICATIONS FOR DOUBLE-WALL INSULATED PLENUMS.

KEYED NOTES

- A. INCLUDE INSULATION AROUND DUCT MOUNTED COILS AND AIR TERMINAL UNIT COILS.
- B. NUMBER OF LAYERS AND TOTAL INSULATION THICKNESS AS RECOMMENDED BY SELECTED MANUFACTURER.
- C. DOES NOT APPLY TO PREFABRICATED, ZERO-CLEARANCE GREASE DUCT.
- D. PROVIDE MANUFACTURER'S RECOMMENDED PROTECTIVE COATING FOR FLEXIBLE ELASTOMERIC THERMAL DUCT INSULATION.
- E. EXPOSED SUPPLY DUCTWORK LOCATED IN CONDITIONED SPACE SERVED BY THAT SYSTEM IS NOT REQUIRED TO BE INSULATED.

PLUMBING FIXTURE SCHEDULE

UNIT IDENTIFICATION	WATER CLOSET/URINAL						FLUSH VALVE		TOILET SEAT		KEYED NOTES
	FIXTURE MATERIAL	FIXTURE COLOR	MOUNTING STYLE	INSTALLED RIM HEIGHT (INCHES)	SUPPLY SPUD LOCATION	MANUFACTURER/ MODEL	CONSUMPTION (GALLONS PER FLUSH)	MANUFACTURER/ MODEL	MANUFACTURER/ MODEL		
WC-1	VITREOUS CHINA	WHITE	FLOOR	15	TOP	KOHLER / K-96053	1.6	SLOAN/ROYAL 111	BEMIS/1955SCT		
APPROVED MANUFACTURERS WATER CLOSETS - KOHLER FLUSHMETER - SLOAN TOILET SEATS - BEMIS, CENTOCO, CHURCH, FERGUSON, OLSONITE, SANDERSON, ZURN											
UNIT IDENTIFICATION	LAVATORY/SINK					FAUCET				KEYED NOTES	
	FIXTURE MATERIAL	FIXTURE COLOR	MOUNTING STYLE	NUMBER OF BOWLS	OVERALL DIMENSIONS L x W INCHES	MANUFACTURER/ MODEL	FLOW RATE GALLONS/ MINUTE	DESCRIPTION	MANUFACTURER/ MODEL		
LAV-1	VITREOUS CHINA	WHITE	WALL	1	21-1/4 x 18-1/8	KOHLER / K-2005	0.5	MANUAL FAUCET, 3-HOLE, 4-INCH CENTERS, 4-INCH WRISTBLADES	CHICAGO / 802-V317	1, 2, 3, 4	
APPROVED MANUFACTURERS LAVATORIES - KOHLER FAUCETS - CHICAGO											
UNIT IDENTIFICATION	FLOOR DRAINS AND FLOOR SINKS							KEYED NOTES			
	FIXTURE MATERIAL	FIXTURE SHAPE	OUTLET SIZE	OUTLET TYPE	GRATE SIZE	MANUFACTURER/ MODEL	DESCRIPTION				
FD-1	NICKEL BRONZE	ROUND	3	BOTTOM	7ø	J.R. SMITH / 2005Y-A	GRAY IRON BODY, VANDAL PROOF SCREWS				
APPROVED MANUFACTURERS FLOOR DRAINS - JOSAM, MIFAB, SIOUX CHIEF, JR SMITH, TYLER, WATTS, ZURN											
GENERAL NOTES: 1. PROVIDE ALL ALL FIXTURE SUPPORTS AS REQUIRED. 2. ALL PLUMBING FIXTURES, EQUIPMENT, TRIM AND FITTINGS SHALL COMPLY WITH LOCAL, STATE AND FEDERAL REGULATIONS AND CODES, INCLUDING, BUT NOT LIMITED TO, WATER AND ENERGY CONSERVATION CODES. THE SCHEDULED AND/OR SPECIFIC PLUMBING FIXTURES AND EQUIPMENT REPRESENT THE MINIMUM CRITERIA AND SHALL BE THE BASIS FOR THE CONTRACTOR'S BASE BID. IF THE SCHEDULED OR SPECIFIED FIXTURES OR EQUIPMENT DO NOT COMPLY WITH GOVERNING CODES OR REGULATIONS IN ALL RESPECTS, THE CONTRACTOR SHALL PROVIDE AN ALTERNATE BID FOR COMPLYING FIXTURES, EQUIPMENT, TRIM OR FITTINGS. THE ABSENCE OF AN ALTERNATE BID SHALL BE CONSTRUED TO MEAN THAT THE CONTRACTOR'S BID INCLUDES ALL COSTS NECESSARY TO MEET ALL REGULATIONS AND CODES.											
KEYED NOTES: 1. COMPLETE W/FLAT GRID DRAIN & UNDERSINK PIPING PROTECTION BY "PLUMBEX". 2. PROVIDE GRID WASTE OUTLET UNLESS SINK REQUIRES DISPOSAL OUTLET OR NOTED OTHERWISE. 3. PROVIDE 1-1/4 17 GAGE CHROME PLATED, CAST BRASS P-TRAP AND WASTE TO WALL ESCUTCHEON. 4. INSTALL COMPLETE WITH UNDER-COUNTER THERMOSTATIC MIXING VALVE. 5. PROVIDE GRID DRAIN FOR SHOWER/TUB AND ANY REQUIRED DRAIN TAILPIECES, UNLESS NOT REQUIRED BY SELECTED BASIN/ENCLOSURE OR NOTED OTHERWISE. 6. INSTALL COMPLETE WITH THERMOSTATIC MIXING VALVE.											



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Willow Run Middle School
 235 Spencer Ln
 Ypsilanti MI 48198
 Project Number: 1916

MECHANICAL SCHEDULES

M7.2

ELECTRICAL SYMBOL LIST

(NOTE: SOME SYMBOLS AND ABBREVIATIONS SHOWN MAY NOT APPLY TO THIS PROJECT)

SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION
FX (NL)	FIXTURE TYPE (NL INDICATES NIGHT LIGHT)	TWC	TWO-WAY COMMUNICATION SYSTEM CALL STATION	CP	CONTROL PANEL	SC	SECURITY CAMERA
[]	LIGHTING FIXTURE	TWCD	TWO-WAY COMMUNICATION SYSTEM AUTO DIALER	M	MOTOR	MD	MOTION DETECTOR
[]	DIRECT/INDIRECT LIGHTING FIXTURE	TWCA	TWO-WAY COMMUNICATION SYSTEM ANNUNCIATOR & COMMUNICATION PANEL	VFC	VARIABLE FREQUENCY CONTROLLER	SK	SECURITY KEY SWITCH
[]	EMERGENCY FIXTURE	TWCP	TWO-WAY COMMUNICATION SYSTEM POWER SUPPLY WITH BATTERY BACK-UP	MC	MANUAL CONTROLLER	DC	DOOR CONTACT
[]	LIGHTING FIXTURE	TWCDP	TWO-WAY COMMUNICATION SYSTEM AUTO DIALER POWER SUPPLY WITH BATTERY BACK-UP	MC	MAGNETIC CONTROLLER	KP	KEY PAD
[]	WALL MOUNTED LIGHTING FIXTURE	RGP	REMOTE GENERATOR ANNUNCIATOR PANEL	CMC	COMBINATION MAGNETIC CONTROLLER	AC	ACCESS CONTROL STATION
[]	LIGHTING FIXTURE	ATS	AUTOMATIC TRANSFER SWITCH	NFDS	NON-FUSIBLE DISCONNECT SWITCH	DP	DURESS PUSH BUTTON STATION
[]	DIRECTIONAL LIGHTING FIXTURE	UPS	UN-INTERRUPTIBLE POWER SUPPLY	FD	FUSIBLE DISCONNECT SWITCH	DE	DELAYED EGRESS
[]	PENDANT LIGHTING FIXTURE	CSX	LOW VOLTAGE CONTROL STATION "X" INDICATES TYPE	CB	ENCLOSED CIRCUIT BREAKER	REX	REQUEST TO EXIT STATION
[]	WALL SCONCE	CSX	SINGLE/DUPLEX RECEPTACLE	PB	PUSH BUTTON STATION	CB	CIRCUIT BREAKER
[]	LIGHTING TRACK	CSX	SINGLE/DUPLEX RECEPTACLE CONTROLLED BY AUTOMATIC CONTROL DEVICE/SYSTEM	JB	JUNCTION BOX	CB	DRAWOUT CIRCUIT BREAKER MANUALLY/ OPERATED
[]	TRACK LIGHTING FIXTURE	CSX	QUAD RECEPTACLE	CB	HARD WIRE POWER CONNECTION	CB	DRAWOUT CIRCUIT BREAKER ELECTRICALLY/ OPERATED
[]	POLE MOUNTED LIGHTING FIXTURE	CSX	ABOVE COUNTER DUPLEX RECEPTACLE (SIMILAR FOR TAMPER RESISTANT, QUADS, EMERGENCY, USB AND GFCI RECEPTACLES)	CB	AUTOMATIC DOOR CONTROLLER	CB	SWITCH
[]	POLE MOUNTED LIGHTING FIXTURE - POST TOP	CSX	DUPLEX RECEPTACLE-GROUND FAULT CIRCUIT INTERRUPTER	PP	AUTOMATIC DOOR PUSH PAD OPERATOR	CSX	AUTOMATIC OR MANUAL TRANSFER SWITCH
[]	BOLLARD LIGHTING FIXTURE	CSX	DUPLEX EMERGENCY RECEPTACLE	GR	GROUND ROD	CSX	FUSE
[]	EMERGENCY LIGHTING UNIT	CSX	DUPLEX TAMPER RESISTANT RECEPTACLE	GR	GROUND CONNECTION	CSX	TRANSFORMER
[]	EXIT LIGHTING FIXTURE WITH DIRECTIONAL ARROWS (SHADED AREA INDICATES FACE)	CSX	QUAD TAMPER RESISTANT RECEPTACLE	GR	CONDUIT SLEEVE WITH BUSHINGS LENGTH AS REQUIRED "X" INDICATES CONDUIT SIZE	CSX	CURRENT TRANSFORMER
[]	EXIT LIGHTING FIXTURE WITH DIRECTIONAL ARROWS (SHADED AREA INDICATES FACE)	CSX	ABOVE COUNTER DUPLEX TAMPER RESISTANT RECEPTACLE	GR	CONDUIT UP	CSX	POTENTIAL TRANSFORMER
[]	EXIT LIGHTING FIXTURE - WALL MOUNTED	CSX	DUPLEX UPS RECEPTACLE	GR	CONDUIT DOWN	CSX	LIGHTNING ARRESTOR
[]	BRANCH CIRCUIT EMERGENCY LIGHTING TRANSFER SWITCH / EMERGENCY LOAD TRANSFER DEVICE	CSX	DUPLEX RECEPTACLE WITH 2 USB PORTS	GR	EMPTY BOX FOR FUTURE TELECOMMUNICATION OUTLET	CSX	PANELBOARD "X" INDICATES PANELBOARD NAME
[]	AUTOMATIC LOAD CONTROL RELAY	CSX	CEILING MOUNTED DUPLEX RECEPTACLE	GR	EMPTY BOX FOR FUTURE CEILING MOUNTED TELECOMMUNICATION OUTLET	CSX	GROUND
[]	LIGHTING CONTROL DEVICE - REFER TO LIGHTING CONTROL SCHEDULE	CSX	4 PORT USB CHARGING STATION	GR	TELECOMMUNICATION CEILING MOUNTED OUTLET "X" INDICATES TYPE	CSX	STRESS CONE TERMINATION
[]	ROOM CONTROL DESIGNATION - REFER TO LIGHTING CONTROL SCHEDULE	CSX	SPECIAL RECEPTACLE - REFER TO ELECTRICAL STANDARD SCHEDULES	GR	TELECOMMUNICATION BACKBOARD	CSX	SECURITY KEY INTERLOCK
[]	SINGLE POLE TOGGLE SWITCH	CSX	MULTI-OUTLET RACEWAY	GR	TELECOMMUNICATION GROUNDING BUS BAR	CSX	ENGINE GENERATOR
[]	TWO POLE TOGGLE SWITCH	CSX	MULTI-SERVICE DROP SEE ELECTRICAL DETAILS AND DIAGRAMS SHEET "X" INDICATES TYPE	GR	TELECOMMUNICATION MAIN GROUNDING BUS BAR	CSX	UTILITY METER
[]	3 WAY TOGGLE SWITCH	CSX	POKE-THROUGH ASSEMBLY "X" INDICATES TYPE	GR	INTERCOM OUTLET	CSX	ELECTRONIC METERING UNIT
[]	4 WAY TOGGLE SWITCH	CSX	FLOOR SERVICE FITTING "X" INDICATES TYPE	GR	SPEAKER	CSX	AMMETER
[]	KEY OPERATED SWITCH	CSX	ACCESS FLOOR SERVICE FITTING "X" INDICATES TYPE	GR	SPEAKER - WALL MOUNTED	CSX	VOLTMETER
[]	3 WAY KEY OPERATED SWITCH	CSX	CORD REEL "X" INDICATES TYPE	GR	MICROPHONE	CSX	AMMETER SWITCH
[]	4 WAY KEY OPERATED SWITCH	CSX	DUAL SWITCHING FOR INNER/OUTER LAMPS OF FLUORESCENT LIGHT FIXTURES	GR	VOLUME CONTROL/STATION SELECTOR	CSX	VOLTMETER SWITCH
[]	DIMMER SWITCH	CSX	4-WAY DUAL SWITCHING FOR INNER/OUTER LAMPS OF FLUORESCENT LIGHT FIXTURES	GR	SIGNALING BELL	CSX	SURGE PROTECTIVE DEVICE
[]	3 WAY DIMMER SWITCH	CSX	DIGITAL TIME SWITCH	GR	SINGLE FACE CLOCK - CEILING MOUNTED	CSX	CONTROL RELAY
[]	DIMMER OCCUPANCY SENSOR SWITCH	CSX	ILLUMINATED TOGGLE SWITCH FOR CONTROL OF LIGHTING ON CRITICAL POWER-ILLUMINATED WHEN SWITCH IS IN "OFF" POSITION	GR	SINGLE FACE CLOCK - WALL MOUNTED	CSX	TIME DELAY RELAY
[]	LOW VOLTAGE DIMMER SWITCH	CSX	LOW VOLTAGE SWITCH	GR	DOUBLE FACE CLOCK - CEILING MOUNTED	CSX	THERMAL OVERLOAD RELAY
[]	PILOT SWITCH	CSX	OCCUPANCY SENSOR	GR	DOUBLE FACE COMBINATION CLOCK/SPEAKER CEILING MOUNTED	CSX	NORMALLY OPEN CONTACTS
		CSX	OCCUPANCY SENSOR REFER TO ELECTRICAL STANDARD SCHEDULES	GR	DOUBLE FACE COMBINATION CLOCK/SPEAKER WALL MOUNTED	CSX	NORMALLY CLOSED CONTACTS
		CSX	OCCUPANCY SENSOR "X" INDICATES TYPE	GR	TIME CLOCK	CSX	N.O. PUSH BUTTON SINGLE CIRCUIT
		CSX		GR	CONTACTOR	CSX	N.C. PUSH BUTTON SINGLE CIRCUIT
		CSX		GR	PHOTOCELL	CSX	CABLE VAULT "X-X" INDICATES TYPE
		CSX		GR	TWST TIMER	CSX	BRANCH CIRCUIT PANELBOARD
		CSX		GR		CSX	LOAD CENTER
		CSX		GR		CSX	MOTOR CONTROL CENTER
		CSX		GR		CSX	TRANSFORMER
		CSX		GR		CSX	DISTRIBUTION PANEL
		CSX		GR		CSX	GROUND BUS
		CSX		GR		CSX	PLUG IN BUSWAY
		CSX		GR		CSX	FEEDER BUSWAY

SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION
[]	SECURITY CAMERA	[]	MANUAL FIRE ALARM BOX	[]	SMOKE DETECTOR	[]	DUCT SMOKE DETECTOR
[]	MOTION DETECTOR	[]	CARBON MONOXIDE DETECTOR	[]	REMOTE TEST STATION (FOR DUCT DETECTOR)	[]	THERMAL DETECTOR
[]	SECURITY KEY SWITCH	[]	FIRE ALARM BELL	[]	PROJECTED BEAM DETECTOR	[]	FIRE ALARM AUDIBLE NOTIFICATION APPLIANCE
[]	DOOR CONTACT	[]	FIRE ALARM VISUAL NOTIFICATION APPLIANCE "XX" INDICATES CANDELA RATING IF NO RATING SHOWN, APPLIANCE IS 15cd	[]	FIRE ALARM COMBINATION VISUAL/ AUDIBLE "XX" INDICATES CANDELA RATING IF NO RATING SHOWN, APPLIANCE IS 15cd	[]	FIRE ALARM COMBINATION VISUAL/ AUDIBLE NOTIFICATION APPLIANCE- CEILING MOUNTED "XX" INDICATES CANDELA RATING IF NO RATING SHOWN, APPLIANCE IS 15cd
[]	KEY PAD	[]	FIRE ALARM VISUAL NOTIFICATION APPLIANCE CEILING MOUNTED "XX" INDICATES CANDELA RATING IF NO RATING SHOWN, APPLIANCE IS 15cd	[]	FIRE ALARM AUDIBLE NOTIFICATION APPLIANCE - CEILING MOUNTED	[]	FIRE ALARM AUDIBLE NOTIFICATION APPLIANCE - CEILING MOUNTED
[]	ACCESS CONTROL STATION	[]	FIRE ALARM AUDIBLE NOTIFICATION APPLIANCE - CEILING MOUNTED	[]	FIRE ALARM AUDIBLE NOTIFICATION APPLIANCE - CEILING MOUNTED	[]	FIRE ALARM AUDIBLE NOTIFICATION APPLIANCE - CEILING MOUNTED
[]	DURESS PUSH BUTTON STATION	[]	FIRE ALARM AUDIBLE NOTIFICATION APPLIANCE - CEILING MOUNTED	[]	FIRE ALARM AUDIBLE NOTIFICATION APPLIANCE - CEILING MOUNTED	[]	FIRE ALARM AUDIBLE NOTIFICATION APPLIANCE - CEILING MOUNTED
[]	DELAYED EGRESS	[]	FIRE ALARM AUDIBLE NOTIFICATION APPLIANCE - CEILING MOUNTED	[]	FIRE ALARM AUDIBLE NOTIFICATION APPLIANCE - CEILING MOUNTED	[]	FIRE ALARM AUDIBLE NOTIFICATION APPLIANCE - CEILING MOUNTED
[]	REQUEST TO EXIT STATION	[]	FIRE ALARM AUDIBLE NOTIFICATION APPLIANCE - CEILING MOUNTED	[]	FIRE ALARM AUDIBLE NOTIFICATION APPLIANCE - CEILING MOUNTED	[]	FIRE ALARM AUDIBLE NOTIFICATION APPLIANCE - CEILING MOUNTED
[]	CIRCUIT BREAKER	[]	FIRE ALARM AUDIBLE NOTIFICATION APPLIANCE - CEILING MOUNTED	[]	FIRE ALARM AUDIBLE NOTIFICATION APPLIANCE - CEILING MOUNTED	[]	FIRE ALARM AUDIBLE NOTIFICATION APPLIANCE - CEILING MOUNTED
[]	DRAWOUT CIRCUIT BREAKER MANUALLY/ OPERATED	[]	FIRE ALARM AUDIBLE NOTIFICATION APPLIANCE - CEILING MOUNTED	[]	FIRE ALARM AUDIBLE NOTIFICATION APPLIANCE - CEILING MOUNTED	[]	FIRE ALARM AUDIBLE NOTIFICATION APPLIANCE - CEILING MOUNTED
[]	DRAWOUT CIRCUIT BREAKER ELECTRICALLY/ OPERATED	[]	FIRE ALARM AUDIBLE NOTIFICATION APPLIANCE - CEILING MOUNTED	[]	FIRE ALARM AUDIBLE NOTIFICATION APPLIANCE - CEILING MOUNTED	[]	FIRE ALARM AUDIBLE NOTIFICATION APPLIANCE - CEILING MOUNTED
[]	SWITCH	[]	FIRE ALARM AUDIBLE NOTIFICATION APPLIANCE - CEILING MOUNTED	[]	FIRE ALARM AUDIBLE NOTIFICATION APPLIANCE - CEILING MOUNTED	[]	FIRE ALARM AUDIBLE NOTIFICATION APPLIANCE - CEILING MOUNTED
[]	AUTOMATIC OR MANUAL TRANSFER SWITCH	[]	FIRE ALARM AUDIBLE NOTIFICATION APPLIANCE - CEILING MOUNTED	[]	FIRE ALARM AUDIBLE NOTIFICATION APPLIANCE - CEILING MOUNTED	[]	FIRE ALARM AUDIBLE NOTIFICATION APPLIANCE - CEILING MOUNTED
[]	FUSE	[]	FIRE ALARM AUDIBLE NOTIFICATION APPLIANCE - CEILING MOUNTED	[]	FIRE ALARM AUDIBLE NOTIFICATION APPLIANCE - CEILING MOUNTED	[]	FIRE ALARM AUDIBLE NOTIFICATION APPLIANCE - CEILING MOUNTED
[]	TRANSFORMER	[]	FIRE ALARM AUDIBLE NOTIFICATION APPLIANCE - CEILING MOUNTED	[]	FIRE ALARM AUDIBLE NOTIFICATION APPLIANCE - CEILING MOUNTED	[]	FIRE ALARM AUDIBLE NOTIFICATION APPLIANCE - CEILING MOUNTED
[]	CURRENT TRANSFORMER	[]	FIRE ALARM AUDIBLE NOTIFICATION APPLIANCE - CEILING MOUNTED	[]	FIRE ALARM AUDIBLE NOTIFICATION APPLIANCE - CEILING MOUNTED	[]	FIRE ALARM AUDIBLE NOTIFICATION APPLIANCE - CEILING MOUNTED
[]	POTENTIAL TRANSFORMER	[]	FIRE ALARM AUDIBLE NOTIFICATION APPLIANCE - CEILING MOUNTED	[]	FIRE ALARM AUDIBLE NOTIFICATION APPLIANCE - CEILING MOUNTED	[]	FIRE ALARM AUDIBLE NOTIFICATION APPLIANCE - CEILING MOUNTED
[]	LIGHTNING ARRESTOR	[]	FIRE ALARM AUDIBLE NOTIFICATION APPLIANCE - CEILING MOUNTED	[]	FIRE ALARM AUDIBLE NOTIFICATION APPLIANCE - CEILING MOUNTED	[]	FIRE ALARM AUDIBLE NOTIFICATION APPLIANCE - CEILING MOUNTED
[]	PANELBOARD "X" INDICATES PANELBOARD NAME	[]	FIRE ALARM AUDIBLE NOTIFICATION APPLIANCE - CEILING MOUNTED	[]	FIRE ALARM AUDIBLE NOTIFICATION APPLIANCE - CEILING MOUNTED	[]	FIRE ALARM AUDIBLE NOTIFICATION APPLIANCE - CEILING MOUNTED
[]	GROUND	[]	FIRE ALARM AUDIBLE NOTIFICATION APPLIANCE - CEILING MOUNTED	[]	FIRE ALARM AUDIBLE NOTIFICATION APPLIANCE - CEILING MOUNTED	[]	FIRE ALARM AUDIBLE NOTIFICATION APPLIANCE - CEILING MOUNTED
[]	STRESS CONE TERMINATION	[]	FIRE ALARM AUDIBLE NOTIFICATION APPLIANCE - CEILING MOUNTED	[]	FIRE ALARM AUDIBLE NOTIFICATION APPLIANCE - CEILING MOUNTED	[]	FIRE ALARM AUDIBLE NOTIFICATION APPLIANCE - CEILING MOUNTED
[]	SECURITY KEY INTERLOCK	[]	FIRE ALARM AUDIBLE NOTIFICATION APPLIANCE - CEILING MOUNTED	[]	FIRE ALARM AUDIBLE NOTIFICATION APPLIANCE - CEILING MOUNTED	[]	FIRE ALARM AUDIBLE NOTIFICATION APPLIANCE - CEILING MOUNTED
[]	ENGINE GENERATOR	[]	FIRE ALARM AUDIBLE NOTIFICATION APPLIANCE - CEILING MOUNTED	[]	FIRE ALARM AUDIBLE NOTIFICATION APPLIANCE - CEILING MOUNTED	[]	FIRE ALARM AUDIBLE NOTIFICATION APPLIANCE - CEILING MOUNTED
[]	UTILITY METER	[]	FIRE ALARM AUDIBLE NOTIFICATION APPLIANCE - CEILING MOUNTED	[]	FIRE ALARM AUDIBLE NOTIFICATION APPLIANCE - CEILING MOUNTED	[]	FIRE ALARM AUDIBLE NOTIFICATION APPLIANCE - CEILING MOUNTED
[]	ELECTRONIC METERING UNIT	[]	FIRE ALARM AUDIBLE NOTIFICATION APPLIANCE - CEILING MOUNTED	[]	FIRE ALARM AUDIBLE NOTIFICATION APPLIANCE - CEILING MOUNTED	[]	FIRE ALARM AUDIBLE NOTIFICATION APPLIANCE - CEILING MOUNTED
[]	AMMETER	[]	FIRE ALARM AUDIBLE NOTIFICATION APPLIANCE - CEILING MOUNTED	[]	FIRE ALARM AUDIBLE NOTIFICATION APPLIANCE - CEILING MOUNTED	[]	FIRE ALARM AUDIBLE NOTIFICATION APPLIANCE - CEILING MOUNTED
[]	VOLTMETER	[]	FIRE ALARM AUDIBLE NOTIFICATION APPLIANCE - CEILING MOUNTED	[]	FIRE ALARM AUDIBLE NOTIFICATION APPLIANCE - CEILING MOUNTED	[]	FIRE ALARM AUDIBLE NOTIFICATION APPLIANCE - CEILING MOUNTED
[]	AMMETER SWITCH	[]	FIRE ALARM AUDIBLE NOTIFICATION APPLIANCE - CEILING MOUNTED	[]	FIRE ALARM AUDIBLE NOTIFICATION APPLIANCE - CEILING MOUNTED	[]	FIRE ALARM AUDIBLE NOTIFICATION APPLIANCE - CEILING MOUNTED
[]	VOLTMETER SWITCH	[]	FIRE ALARM AUDIBLE NOTIFICATION APPLIANCE - CEILING MOUNTED	[]	FIRE ALARM AUDIBLE NOTIFICATION APPLIANCE - CEILING MOUNTED	[]	FIRE ALARM AUDIBLE NOTIFICATION APPLIANCE - CEILING MOUNTED
[]	SURGE PROTECTIVE DEVICE	[]	FIRE ALARM AUDIBLE NOTIFICATION APPLIANCE - CEILING MOUNTED	[]	FIRE ALARM AUDIBLE NOTIFICATION APPLIANCE - CEILING MOUNTED	[]	FIRE ALARM AUDIBLE NOTIFICATION APPLIANCE - CEILING MOUNTED
[]	CONTROL RELAY	[]	FIRE ALARM AUDIBLE NOTIFICATION APPLIANCE - CEILING MOUNTED	[]	FIRE ALARM AUDIBLE NOTIFICATION APPLIANCE - CEILING MOUNTED	[]	FIRE ALARM AUDIBLE NOTIFICATION APPLIANCE - CEILING MOUNTED
[]	TIME DELAY RELAY	[]	FIRE ALARM AUDIBLE NOTIFICATION APPLIANCE - CEILING MOUNTED	[]	FIRE ALARM AUDIBLE NOTIFICATION APPLIANCE - CEILING MOUNTED	[]	FIRE ALARM AUDIBLE NOTIFICATION APPLIANCE - CEILING MOUNTED
[]	THERMAL OVERLOAD RELAY	[]	FIRE ALARM AUDIBLE NOTIFICATION APPLIANCE - CEILING MOUNTED	[]	FIRE ALARM AUDIBLE NOTIFICATION APPLIANCE - CEILING MOUNTED	[]	FIRE ALARM AUDIBLE NOTIFICATION APPLIANCE - CEILING MOUNTED
[]	NORMALLY OPEN CONTACTS	[]	FIRE ALARM AUDIBLE NOTIFICATION APPLIANCE - CEILING MOUNTED	[]	FIRE ALARM AUDIBLE NOTIFICATION APPLIANCE - CEILING MOUNTED	[]	FIRE ALARM AUDIBLE NOTIFICATION APPLIANCE - CEILING MOUNTED
[]	NORMALLY CLOSED CONTACTS	[]	FIRE ALARM AUDIBLE NOTIFICATION APPLIANCE - CEILING MOUNTED	[]	FIRE ALARM AUDIBLE NOTIFICATION APPLIANCE - CEILING MOUNTED	[]	FIRE ALARM AUDIBLE NOTIFICATION APPLIANCE - CEILING MOUNTED
[]	N.O. PUSH BUTTON SINGLE CIRCUIT	[]	FIRE ALARM AUDIBLE NOTIFICATION APPLIANCE - CEILING MOUNTED	[]	FIRE ALARM AUDIBLE NOTIFICATION APPLIANCE - CEILING MOUNTED	[]	FIRE ALARM AUDIBLE NOTIFICATION APPLIANCE - CEILING MOUNTED
[]	N.C. PUSH BUTTON SINGLE CIRCUIT	[]	FIRE ALARM AUDIBLE NOTIFICATION APPLIANCE - CEILING MOUNTED	[]	FIRE ALARM AUDIBLE NOTIFICATION APPLIANCE - CEILING MOUNTED	[]	FIRE ALARM AUDIBLE NOTIFICATION APPLIANCE - CEILING MOUNTED
[]	CABLE VAULT "X-X" INDICATES TYPE	[]	FIRE ALARM AUDIBLE NOTIFICATION APPLIANCE - CEILING MOUNTED	[]	FIRE ALARM AUDIBLE NOTIFICATION APPLIANCE - CEILING MOUNTED	[]	FIRE ALARM AUDIBLE NOTIFICATION APPLIANCE - CEILING MOUNTED
[]	BRANCH CIRCUIT PANELBOARD	[]	FIRE ALARM AUDIBLE NOTIFICATION APPLIANCE - CEILING MOUNTED	[]	FIRE ALARM AUDIBLE NOTIFICATION APPLIANCE - CEILING MOUNTED	[]	FIRE ALARM AUDIBLE NOTIFICATION APPLIANCE - CEILING MOUNTED
[]	LOAD CENTER	[]	FIRE ALARM AUDIBLE NOTIFICATION APPLIANCE - CEILING MOUNTED	[]	FIRE ALARM AUDIBLE NOTIFICATION APPLIANCE - CEILING MOUNTED	[]	FIRE ALARM AUDIBLE NOTIFICATION APPLIANCE - CEILING MOUNTED
[]	MOTOR CONTROL CENTER	[]	FIRE ALARM AUDIBLE NOTIFICATION APPLIANCE - CEILING MOUNTED	[]	FIRE ALARM AUDIBLE NOTIFICATION APPLIANCE - CEILING MOUNTED	[]	FIRE ALARM AUDIBLE NOTIFICATION APPLIANCE - CEILING MOUNTED
[]	TRANSFORMER	[]	FIRE ALARM AUDIBLE NOTIFICATION APPLIANCE - CEILING MOUNTED	[]	FIRE ALARM AUDIBLE NOTIFICATION APPLIANCE - CEILING MOUNTED	[]	FIRE ALARM AUDIBLE NOTIFICATION APPLIANCE - CEILING MOUNTED
[]	DISTRIBUTION PANEL	[]	FIRE ALARM AUDIBLE NOTIFICATION APPLIANCE - CEILING MOUNTED	[]	FIRE ALARM AUDIBLE NOTIFICATION APPLIANCE - CEILING MOUNTED	[]	FIRE ALARM AUDIBLE NOTIFICATION APPLIANCE - CEILING MOUNTED
[]	GROUND BUS	[]	FIRE ALARM AUDIBLE NOTIFICATION APPLIANCE - CEILING MOUNTED	[]	FIRE ALARM AUDIBLE NOTIFICATION APPLIANCE - CEILING MOUNTED	[]	FIRE ALARM AUDIBLE NOTIFICATION APPLIANCE - CEILING MOUNTED
[]	PLUG IN BUSWAY	[]	FIRE ALARM AUDIBLE NOTIFICATION APPLIANCE - CEILING MOUNTED	[]	FIRE ALARM AUDIBLE NOTIFICATION APPLIANCE - CEILING MOUNTED	[]	FIRE ALARM AUDIBLE NOTIFICATION APPLIANCE - CEILING MOUNTED
[]	FEEDER BUSWAY	[]	FIRE ALARM AUDIBLE NOTIFICATION APPLIANCE - CEILING MOUNTED	[]	FIRE ALARM AUDIBLE NOTIFICATION APPLIANCE - CEILING MOUNTED	[]	FIRE ALARM AUDIBLE NOTIFICATION APPLIANCE - CEILING MOUNTED

ELECTRICAL DRAWING INDEX

SHEET NO.	SHEET TITLE
E0.1	ELECTRICAL STANDARDS AND DRAWING INDEX
E0.2	ELECTRICAL STANDARD SCHEDULES
E0.3	ELECTRICAL SPECIFICATIONS
E0.1	FIRST FLOOR ELECTRICAL DEMOLITION PLAN
E2.1	FIRST FLOOR LIGHTING PLAN
E3.1	FIRST FLOOR POWER PLAN

ELECTRICAL ABBREVIATION LIST

ABBREVIATION	DESCRIPTION	ABBREVIATION	DESCRIPTION	ABBREVIATION	DESCRIPTION
KV	KILOVOLT	P	POLE	PB	PUSHBUTTON STATION
AF	AMPERES FRAME (BREAKER RATING)	PH	PHASE	PT	POTENTIAL TRANSFORMER
AFCI	ARC FAULT CIRCUIT INTERRUPTER	PDP	POWER DISTRIBUTION PANEL	RECEPT.	RECEPTACLE
A.F.F.	ABOVE FINISH FLOOR	RDP	RECEPTACLE DISTRIBUTION PANEL	RP	RECEPTACLE PANEL
AIC	AMPS INTERRUPTING CAPACITY	RSC	RIGID STEEL CONDUIT	SCHED	SCHEDULE
AL	AUDIENCE LEFT	SW	SWITCHBOARD	SWGR	SWITCHGEAR
AR	AUDIENCE RIGHT	TR	TELECOM	TB	TERMINAL BOX
AT	AMPERES TRIP (BREAKER SETTING)	TR	TELECOMMUNICATIONS	TR	TAMPER RESISTANT SWITCHGEAR
ATS	AUTOMATIC TRANSFER SWITCH	MTG	MOUNTING	TTB	TELEPHONE TERMINAL BACKBOARD
AUX	AUXILIARY	MTR	MOTOR	TYP	TYPICAL
BKR	BREAKER	N	NEUTRAL	U.O.N.	UNLESS OTHERWISE NOTED
BPS	BOLTED PRESSURE SWITCH	NC	NORMALLY CLOSED	US	UPSTAGE
C	CONDUIT	NEC	NATIONAL ELECTRICAL CODE	V	VOLTS
CB	CIRCUIT BREAKER	NF	NON-FUSIBLE	W	WIRE OR WATTS
CFCI	CONTRACTOR FURNISHED, CONTRACTOR INSTALLED	NIC	NOT IN CONTRACT	WG	WIRE GUARD
CKT	CIRCUIT	NL	NIGHT LIGHT	WP	WEATHERPROOF
CT	CURRENT TRANSFORMER	NO	NORMALLY OPEN	WTR	TRANSFORMER EXPLOSION PROOF
DEM	DEMOLITION	NTS	NOT TO SCALE	XFMR	TRANSFORMER
DM	DIMENSION	OC	OWNER FURNISHED, CONTRACTOR INSTALLED	XP	EXISTING
DISC	DISCONNECT	OFI	OWNER FURNISHED, CONTRACTOR INSTALLED	(R)	RELOCATED
DP	DISTRIBUTION PANEL	OFI	OWNER FURNISHED, CONTRACTOR INSTALLED		
DS	DOWNSTAGE				
DWG	DRAWING				
EBU	EMERGENCY BATTERY UNIT				
EC	ELECTRICAL CONTRACTOR ELECTRICAL				
ELEC	ELECTRICAL				
EM/EMERG	EMERGENCY				
EMT	ELECTRICAL METALLIC TUBING				
EO	ELECTRICALLY OPERATED				
EPO	EMERGENCY POWER OFF				
EWC	ELECTRIC WATER COOLER				
EXIST	EXISTING				
FA	FIRE ALARM				
FLA	FULL LOAD AMPS				
FLR	FLOOR				
FOH	FRONT OF HOUSE				
FSEC	FOOD SERVICE EQUIPMENT CONTRACTOR				
FU	FUSE				
G/GRD/EG	GROUND				
GFCI	GROUND FAULT CIRCUIT INTERRUPTER				
GFP	GROUND FAULT PROTECTION				
HOA	HAND				

ELECTRICAL GENERAL REQUIREMENTS

- A. SCOPE OF WORK: ALL MATERIAL SHALL BE NEW UNLESS OTHERWISE INDICATED. FURNISH ALL LABOR, EQUIPMENT, TECHNICAL SUPERVISION, AND INCIDENTAL SERVICES REQUIRED TO COMPLETE, TEST, AND LEAVE READY FOR OPERATION THE ELECTRICAL SYSTEMS AS SPECIFIED AND AS INDICATED ON DRAWINGS.
- B. ORDINANCES AND CODES: PERFORM ALL WORK IN ACCORDANCE WITH APPLICABLE FEDERAL, STATE AND LOCAL ORDINANCES AND REGULATIONS, THE RULES AND REGULATIONS OF NFPA, NECA, AND UL, UNLESS OTHERWISE INDICATED.
- C. UNLESS OTHERWISE INDICATED, ALL REQUIRED PERMITS, LICENSES, INSPECTIONS, APPROVALS AND FEES FOR ELECTRICAL WORK SHALL BE SECURED AND PAID FOR BY THE CONTRACTOR. ALL WORK SHALL CONFORM TO ALL APPLICABLE CODES, RULES AND REGULATIONS.
- D. THE DRAWINGS SHOW THE LOCATION AND GENERAL ARRANGEMENT OF EQUIPMENT, ELECTRICAL SYSTEMS AND RELATED ITEMS. THEY SHALL BE FOLLOWED AS CLOSELY AS ELEMENTS OF THE CONSTRUCTION WILL PERMIT.
- E. EXAMINE THE DRAWINGS OF OTHER TRADES AND VERIFY THE CONDITIONS GOVERNING THE WORK ON THE JOB SITE. ARRANGE WORK ACCORDINGLY, PROVIDING SUCH FITTINGS, CONDUIT, JUNCTION BOXES AND ACCESSORIES AS MAY BE REQUIRED TO MEET SUCH CONDITIONS.
- F. COORDINATE ARRANGEMENT, MOUNTING AND SUPPORT OF ELECTRICAL EQUIPMENT WITH OTHER TRADES.
- G. VISIT THE SITE, EXAMINE AND VERIFY THE CONDITIONS UNDER WHICH THE WORK MUST BE CONDUCTED BEFORE SUBMITTING PROPOSAL. THE SUBMITTING OF A PROPOSAL IMPLIES THAT THE CONTRACTOR HAS VISITED THE SITE AND UNDERSTANDS THE CONDITIONS UNDER WHICH THE WORK MUST BE CONDUCTED. NO ADDITIONAL CHARGES WILL BE ALLOWED BECAUSE OF FAILURE TO MAKE THIS EXAMINATION OR TO INCLUDE ALL MATERIALS AND LABOR TO COMPLETE THE WORK.
- H. BIDS SHALL BE BASED UPON MANUFACTURED EQUIPMENT SPECIFIED. VOLUNTARY ALTERNATES MAY BE SUBMITTED FOR CONSIDERATION, WITH LISTED ADDITION OR DEDUCTION TO THE BID.
- I. WARRANTY: CONTRACTOR SHALL WARRANT THAT THE ELECTRICAL INSTALLATION IS FREE FROM DEFECTS AND AGREES TO REPLACE OR REPAIR, TO THE OWNER'S SATISFACTION, ANY PART OF THIS ELECTRICAL INSTALLATION WHICH BECOMES DEFECTIVE WITHIN A PERIOD OF ONE YEAR FROM THE DATE OF SUBSTANTIAL COMPLETION FOLLOWING FINAL ACCEPTANCE, PROVIDED THAT SUCH FAILURE IS DUE TO DEFECTS IN THE EQUIPMENT, MATERIAL, WORKMANSHIP OR FAILURE TO FOLLOW THE CONTRACT DOCUMENTS.
- J. CONTRACTOR SHALL BE RESPONSIBLE FOR ANY TEMPORARY SERVICES INCLUDING EQUIPMENT AND INSTALLATION REQUIRED TO MAINTAIN OPERATION AS A RESULT OF ANY EQUIPMENT FAILURE OR DEFECT DURING WARRANTY PERIOD.
- K. FILE WITH THE OWNER ANY AND ALL WARRANTIES FROM THE EQUIPMENT MANUFACTURERS INCLUDING THE OPERATING CONDITIONS AND PERFORMANCE CAPACITIES THEY ARE BASED ON.
- L. CONSULT WITH THE OWNER'S REPRESENTATIVE AS TO THE METHODS OF CARRYING ON THE WORK SO AS NOT TO INTERFERE WITH THE OWNER'S OPERATION ANY MORE THAN ABSOLUTELY NECESSARY. ACCORDINGLY, ALL SERVICE LINES SHALL BE KEPT IN OPERATION AS LONG AS POSSIBLE AND THE SERVICES SHALL ONLY BE INTERRUPTED AT SUCH TIME AS WILL BE DESIGNATED BY THE OWNER'S REPRESENTATIVE.
- M. ALL CUTTING, PATCHING AND REPAIR WORK SHALL BE PERFORMED BY THE CONTRACTOR THROUGH APPROVED, QUALIFIED SUBCONTRACTORS. CONTRACTOR SHALL INCLUDE FULL COST OF SAME IN BID.
- N. PROVIDE ALL EXCAVATION, TRENCHING, TUNNELING, DEWATERING AND BACKFILLING REQUIRED FOR THE ELECTRICAL WORK. COORDINATE THE WORK WITH OTHER EXCAVATING AND BACKFILLING IN THE SAME AREA.
- O. INSPECT THE INSTALLATION OF ALL EQUIPMENT PER THE MANUFACTURER'S RECOMMENDATION AND APPLICABLE CODES.
- P. PROVIDE UL APPROVED FIRE-STOPPING SYSTEM FOR ALL PENETRATIONS PASSING THROUGH FIRE RATED ASSEMBLIES.
- Q. COMPLY WITH NECA 1.
- R. PROVIDE COMPLETE OPERATION AND MAINTENANCE INSTRUCTIONAL MANUALS COVERING ALL ELECTRICAL EQUIPMENT HEREIN SPECIFIED, TOGETHER WITH PARTS LISTS.
- S. CONTRACTOR SHALL SUBMIT TO THE ARCHITECT/ENGINEER, RECORD DRAWINGS ON ELECTRONIC MEDIA OR MYLAR WHICH HAVE BEEN NEATLY MARKED TO REPRESENT AS-BUILT CONDITIONS FOR ALL NEW ELECTRICAL WORK.
- T. SUBMIT FOR APPROVAL SHOP DRAWINGS FOR ELECTRICAL SYSTEMS OR EQUIPMENT LISTED BELOW:
 1. LIGHTING FIXTURES
 2. LIGHTING CONTROL SYSTEMS AND DEVICES

DEMOLITION WORK

- A. IN GENERAL, DEMOLITION WORK IS INDICATED ON THE DRAWINGS. HOWEVER, THE CONTRACTOR SHALL VISIT THE JOB SITE TO DETERMINE THE FULL EXTENT AND SCOPE OF THIS WORK.
- B. UNLESS SPECIFICALLY NOTED TO THE CONTRARY, REMOVED MATERIALS SHALL NOT BE REUSED IN THE WORK. SALVAGED MATERIALS THAT ARE TO BE REUSED SHALL BE STORED SAFE AGAINST DAMAGE AND TURNED OVER TO THE APPROPRIATE TRADE FOR REUSE. SALVAGED MATERIALS OF VALUE THAT ARE NOT TO BE REUSED SHALL REMAIN THE PROPERTY OF THE OWNER UNLESS SUCH OWNERSHIP IS WAIVED. ITEMS ON WHICH THE OWNER WAIVES OWNERSHIP SHALL BECOME THE PROPERTY OF THE CONTRACTOR, WHO SHALL REMOVE AND LEGALLY DISPOSE OF SAME, AWAY FROM THE PREMISES.
- C. WHERE EQUIPMENT OR FIXTURES ARE REMOVED AND WALLS REMAIN, OUTLETS SHALL BE PROPERLY BLANKED OFF, CONDUITS CAPPED, AND CONDUCTORS REMOVED BACK TO SOURCE OR NEAREST UPSTREAM DEVICE REMAINING IN SERVICE. AFTER ALTERATIONS ARE DONE, THE ENTIRE INSTALLATION SHALL PRESENT A "FINISHED" LOOK, AS APPROVED BY THE ARCHITECT/ENGINEER. THE ORIGINAL FUNCTION OF THE PRESENT ELECTRICAL WORK TO BE MODIFIED SHALL NOT BE CHANGED UNLESS REQUIRED BY THE SPECIFIC REVISIONS TO THE SYSTEM AS SPECIFIED OR AS INDICATED.
- D. REROUTE SIGNAL WIRES, LIGHTING AND POWER WIRING AS REQUIRED TO MAINTAIN SERVICE. WHERE WALLS AND CEILINGS ARE TO BE REMOVED AS SHOWN ON THE DRAWINGS, THE CONDUIT IS TO BE CUT OFF BY THE ELECTRICAL TRADES SO THAT THE ABANDONED CONDUIT IN THESE WALLS AND CEILINGS MAY BE REMOVED WITH THE WALLS AND CEILINGS BY THE ARCHITECTURAL TRADES. ALL DEAD-END CONDUIT RUNS SHALL BE PLUGGED AT THE REMAINING LINE OUTLET BOXES OR AT THE PANELS.
- E. WHERE NEW WALLS AND/OR FLOORS ARE INSTALLED WHICH INTERFERE WITH EXISTING OUTLETS, DEVICES, ETC., THE ELECTRICAL TRADES SHALL ADJUST, EXTEND AND RECONNECT SUCH ITEMS AS REQUIRED TO MAINTAIN CONTINUITY OF SAME.
- F. ALL ELECTRICAL WORK IN ALTERED AND UNALTERED AREAS SHALL BE RUN CONCEALED WHEREVER POSSIBLE. USE OF SURFACE RACEWAY OR EXPOSED CONDUITS WILL BE PERMITTED ONLY WHERE APPROVED BY THE ARCHITECT/ENGINEER.
- G. EXISTING LIGHTING SHALL BE REUSED WHERE INDICATED ON PLANS. REUSED FIXTURES SHALL BE DETERGENT CLEANED, RELAMPED AND RECONDITIONED SUITABLE FOR SATISFACTORY OPERATION AND APPEARANCE.

GROUNDING AND BONDING

- A. EQUIPMENT GROUNDING: COMPLY WITH NFPA 70, ARTICLE 250, FOR TYPES, SIZES, AND QUANTITIES OF EQUIPMENT GROUNDING CONDUCTORS, UNLESS SPECIFIC TYPES, LARGER SIZES, OR MORE CONDUCTORS THAN REQUIRED BY NFPA 70 ARE INDICATED.
- B. PROVIDE EQUIPMENT GROUNDING CONDUCTORS IN EACH RACEWAY.

CONDUCTORS AND CABLES

- A. CONDUCTOR MATERIAL: COPPER COMPLYING WITH NEMA WC 70; STRANDED CONDUCTOR.
- B. CONDUCTOR INSULATION TYPES: TYPE THHN-THWN, XHHW-2, SO, COMPLYING WITH NEMA WC 70.
- C. CONCEAL CABLES IN FINISHED WALLS, CEILINGS, AND FLOORS, UNLESS OTHERWISE INDICATED.
- D. USE CONDUCTOR NOT SMALLER THAN 12 AWG FOR POWER AND LIGHTING CIRCUITS. UNLESS INDICATED OTHERWISE, ALL CIRCUITS SHALL BE 2#12, 1#12G, 3/4" C.
- E. USE CONDUCTOR NOT SMALLER THAN 14 AWG FOR CONTROL CIRCUITS, PROVIDED BY ELECTRICAL CONTRACTOR.
- F. SUPPORT COMMUNICATION CABLES ABOVE ACCESSIBLE CEILING, USING SPRING METAL CLIPS OR PLASTIC CABLE TIES TO SUPPORT CABLES FROM STRUCTURE. DO NOT REST CABLE ON CEILING PANELS.
- G. USE "STA-KON" CONNECTORS TO TERMINATE STRANDED CONDUCTORS #10 AWG AND SMALLER TO SCREW TERMINALS.
- H. CONDUCTOR AND INSULATION APPLICATIONS: REFER TO RACEWAY / CONDUCTOR / CABLE APPLICATION SCHEDULE ON SHEET E02.

RACEWAYS AND BOXES

- A. SURFACE METAL RACEWAYS: GALVANIZED STEEL WITH SNAP-ON COVERS. FINISH WITH MANUFACTURER'S STANDARD PRIME COATING. WIREMOLD OR EQUAL. SIZE/TYPE AS SHOWN ON DRAWINGS.
- B. MINIMUM RACEWAY SIZE: 3/4-INCH TRADE SIZE.
- C. INSTALL CONDUIT IN ACCORDANCE WITH NECA "NATIONAL ELECTRICAL INSTALLATION STANDARDS".
- D. ROUTE CONDUITS IN FINISHED AREAS WITH EXPOSED CEILINGS AT UNDERSIDE OF STRUCTURAL DECK OR AS HIGH AS POSSIBLE. WHERE STEEL METAL DECK ON STEEL JOIST CONSTRUCTION, ROUTE CONDUITS ABOVE JOISTS. DO NOT SECURE CONDUIT TO BOTTOM OF JOISTS.
- E. RACEWAY APPLICATIONS: REFER TO RACEWAY / CONDUCTOR / CABLE APPLICATION SCHEDULE ON SHEET E02.
- F. FITTINGS FOR EMT: STEEL, SET SCREW TYPE.
- G. INSTALL SURFACE RACEWAYS ONLY WHERE INDICATED ON DRAWINGS.
- H. CONCEAL CONDUIT AND EMT WITHIN FINISHED WALLS, CEILINGS, AND FLOORS UNLESS OTHERWISE INDICATED.

IDENTIFICATION

- A. COMPLY WITH ANSI A13.1, ANSI C2, NFPA 70, AND 29 CFR 1910.145.
- B. 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.
- C. COORDINATE INSTALLATION OF IDENTIFYING DEVICES WITH COMPLETION OF COVERING AND PAINTING OF SURFACES WHERE DEVICES ARE TO BE APPLIED, WITH LOCATION OF ACCESS PANELS AND DOORS.
- D. INSTALL IDENTIFYING DEVICES BEFORE INSTALLING ACOUSTICAL CEILINGS AND SIMILAR CONCEALMENT.

- E. INSTALL ENGRAVED, LAMINATED ACRYLIC OR MELAMINE LABEL THAT ARE PUNCHED OR DRILLED FOR SCREW MOUNTING WITH SELF TAPPING STAINLESS STEEL SCREWS. LABELS SHALL HAVE BLACK LETTERS ON A WHITE BACKGROUND. MINIMUM LETTER HEIGHT SHALL BE 3/8 INCH (10 MM). LABELS SHALL BE INSTALLED ON ALL ELECTRICAL EQUIPMENT AFFECTED BY PROJECT.
 1. PANELBOARD AND TRANSFORMER NAMEPLATES: IDENTIFY SOURCE FED FROM, VOLTAGE, SIZE, AND NAME.
 2. ENCLOSED CONTROLLERS, CIRCUIT BREAKERS, DISCONNECT SWITCHES: IDENTIFY SOURCE AND LOAD SERVED.
- F. WIRING DEVICES: USE ADHESIVE LABEL WITH BLACK FILLED LETTERING ON FACE OF WALL PLATE (ON THE REAR OF THE FACEPLATE) AND DURABLE WIRE MARKERS OR TAGS INSIDE OUTLET BOXES. LABELS SHALL BE CLEAR POLYESTER WITH BLACK LETTER, FONT SIZE OF 7. IDENTIFY PANELBOARD AND CIRCUIT NUMBER FROM WHICH SERVED.
- G. USE THE COLORS LISTED BELOW FOR UNGROUNDED SERVICE, FEEDER, AND BRANCH-CIRCUIT CONDUCTORS.
 1. COLOR SHALL BE FACTORY APPLIED OR, FOR SIZES LARGER THAN NO. 10 AWG IF AUTHORITIES HAVING JURISDICTION PERMIT, FIELD APPLIED.
 2. COLORS FOR 208/120-V CIRCUITS:
 - a. PHASE A: BLACK.
 - b. PHASE B: RED.
 - c. PHASE C: BLUE.
 - d. NEUTRAL: WHITE.
 3. COLORS FOR 480/277-V CIRCUITS:
 - a. PHASE A: BROWN.
 - b. PHASE B: ORANGE.
 - c. PHASE C: YELLOW.
 - d. NEUTRAL: GRAY.
 4. 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.
- H. WARNING LABELS FOR INDOOR CABINETS, BOXES, AND ENCLOSURES FOR POWER AND LIGHTING: COMPLY WITH 29 CFR 1910.145 AND APPLY SELF-ADHESIVE WARNING LABELS. IDENTIFY SYSTEM VOLTAGE WITH BLACK LETTERS ON AN ORANGE BACKGROUND. APPLY TO EXTERIOR OF DOOR, COVER, OR OTHER ACCESS.
 1. EQUIPMENT WITH MULTIPLE POWER OR CONTROL SOURCES: APPLY TO DOOR OR COVER OF EQUIPMENT INCLUDING, BUT NOT LIMITED TO, THE FOLLOWING:
 - a. ATS.
 - b. SERVICE ENTRANCE EQUIPMENT.
 2. EQUIPMENT REQUIRING WORKSPACE CLEARANCE ACCORDING TO NFPA 70: UNLESS OTHERWISE INDICATED, APPLY TO DOOR OR COVER OF EQUIPMENT BUT NOT ON FLUSH PANELBOARDS AND SIMILAR EQUIPMENT IN FINISHED SPACES.
- I. ACCESSIBLE RACEWAYS AND CABLES OF AUXILIARY SYSTEMS: IDENTIFY THE FOLLOWING SYSTEMS WITH COLOR-CODED, SELF-ADHESIVE VINYL TAPE APPLIED IN BANDS:
 1. FIRE ALARM SYSTEM: RED.
 2. SECURITY SYSTEM: BLUE AND YELLOW.
 3. TELECOMMUNICATION SYSTEM: GREEN AND YELLOW.
 4. CONTROL WIRING: GREEN AND RED.

LIGHTING CONTROL DEVICES

- A. COORDINATE OCCUPANCY SENSOR LOCATIONS, COVERAGES AND REQUIRED QUANTITIES WITH MANUFACTURER'S RECOMMENDATIONS. COVERAGE AREAS INDICATED ON THE DRAWINGS ARE FOR MINOR MOTION (6 TO 8 INCHES OF HAND MOVEMENT). PROVIDE ADDITIONAL OCCUPANCY SENSORS AND CONTROL UNITS AS REQUIRED TO ACHIEVE COMPLETE MINOR MOTION COVERAGE OF THE SPACE INDICATED.
- B. OCCUPANCY SENSOR ADJUSTMENTS: WHEN REQUESTED WITHIN 12 MONTHS OF DATE OF SUBSTANTIAL COMPLETION, PROVIDE ON-SITE ASSISTANCE IN ADJUSTING SENSORS TO SUIT ACTUAL OCCUPIED CONDITIONS. PROVIDE UP TO TWO VISITS TO SITE OUTSIDE NORMAL OCCUPANCY HOURS FOR THIS PURPOSE.
- C. OCCUPANCY SENSOR:
 1. WALL SWITCH PASSIVE INFRARED OCCUPANCY SENSOR: WATTSTOPPER PW-100 OR EQUAL.
 2. DUAL LEVEL SWITCHING PASSIVE INFRARED OCCUPANCY SENSOR: WATTSTOPPER PW-200 OR EQUAL.
 3. 360° CEILING MOUNTED DUAL TECHNOLOGY OCCUPANCY SENSOR: WATTSTOPPER DT 300 OR EQUAL.
 4. 110° WALL MOUNTED DUAL TECHNOLOGY OCCUPANCY SENSOR: WATTSTOPPER DT-200 OR EQUAL.
 5. 360° CEILING MOUNTED ULTRASONIC OCCUPANCY SENSORS: WATTSTOPPER "WT" SERIES OR EQUAL.
 6. 360° CEILING MOUNTED PASSIVE INFRARED OCCUPANCY SENSOR: WATTSTOPPER CI-200 OR EQUAL.
- D. OCCUPANCY SENSOR CONTROL UNITS:
 1. DESCRIPTION: TRANSFORMER AND RELAY COMBINED IN SINGLE UNIT TO PROVIDE 240C POWER TO SENSORS AND PROVIDE 20A CONTACT(S) FOR CONTROL OF LIGHTING LOADS AT 120 OR 277V. CONTROL UNIT INPUT POWER SHALL BE FROM UNSWITCHED LEG OF LIGHTING CIRCUIT IT IS CONTROLLING.
 - a. CONTROL UNITS SHALL BE PROVIDED AS REQUIRED TO POWER CEILING MOUNTED OCCUPANCY SENSORS, CONTROL LIGHTING LOADS AND PROVIDE A MINIMUM OF ONE AUXILIARY CONTACT.
 - b. OCCUPANCY SENSOR CONTROL UNITS SHALL MOUNT EXTERNAL TO 4"SQ JUNCTION BOX IN THE CEILING SPACE. ALL WIRING BETWEEN CONTROL UNIT AND OCCUPANCY SENSOR SHALL BE PLENUM RATED.
 - c. LOCATE CONTROL UNIT IN ACCESSIBLE LOCATION IN GYP-BOARD CEILINGS, ADJACENT TO RETURN AIR GRILLES, OR PROVIDE ACCESS PANEL.
 - d. ADDITIONAL AUXILIARY RELAY MODULES SHALL BE PROVIDED AS REQUIRED TO PROVIDE CONTROL OF ALL LIGHTING CIRCUITS AND ADDITIONAL AUXILIARY CONTACTS AS REQUIRED.
 - e. IT IS ACCEPTABLE TO PROVIDE CONTROLS AND AUXILIARY CONTACTS AS REQUIRED INTEGRAL TO THE CEILING SENSOR, PROVIDED ALL REQUIRED CONTACTS ARE PROVIDED.
 - f. MAXIMUM OF 3 SENSORS PER POWER PACK. VERIFY EXACT QUANTITIES REQUIRED WITH MANUFACTURER.

ENCLOSED SWITCHES AND CIRCUIT BREAKERS

- A. SUBJECT TO COMPLIANCE WITH REQUIREMENTS; PROVIDE PRODUCTS BY SQUARE D, EATON, GENERAL ELECTRIC, OR SIEMENS.
- B. FUSIBLE AND NON-FUSIBLE SWITCHES: NEMA KS 1, QUICK MAKE, QUICK-BREAK LOAD INTERRUPTER ENCLOSED KNIFE SWITCH TYPE HD, WITH CLIPS OR BOLT PADS TO ACCOMMODATE SPECIFIED FUSES (IF REQUIRED), EXTERNALLY OPERABLE LOCKABLE HANDLE WITH CAPABILITY TO ACCEPT TWO PADLOCKS, AND INTERLOCKED WITH COVER IN CLOSED POSITION. SQUARE D OR EQUAL.
- C. TOGGLE DISCONNECT SWITCH: HEAVY DUTY, 30A, 600 VOLT, DOUBLE OR THREE POLE AS REQUIRED, SINGLE THROW, MOTOR RATED SWITCH WITHOUT OVERLOAD PROTECTION. PROVIDE NEMA 1 ENCLOSURE AND PADLOCK ATTACHMENT.
- D. MOLDED-CASE CIRCUIT BREAKER: NEMA AB 1, WITH INTERRUPTING CAPACITY TO MEET AVAILABLE FAULT CURRENTS. THERMAL-MAGNETIC CIRCUIT BREAKER WITH INVERSE TIME-CURRENT ELEMENT FOR LOW-LEVEL OVERLOADS AND INSTANTANEOUS MAGNETIC TRIP ELEMENT FOR SHORT CIRCUITS. ADJUSTABLE MAGNETIC TRIP SETTING FOR CIRCUIT-BREAKER FRAME SIZES 250 A AND LARGER.
- E. MOLDED-CASE SWITCHES: MOLDED-CASE CIRCUIT BREAKER WITH FIXED, HIGH-SET INSTANTANEOUS TRIP ONLY, AND SHORT-CIRCUIT WITHSTAND RATING EQUAL TO EQUIVALENT BREAKER FRAME SIZE INTERRUPTING RATING.
- F. COMPLY WITH APPLICABLE PORTIONS OF NECA 1, NEMA PB 1.1, AND NEMA PB 2.1 FOR INSTALLATION OF ENCLOSED SWITCHES AND CIRCUIT BREAKERS.
- G. SET FIELD-ADJUSTABLE SWITCHES AND CIRCUIT-BREAKER TRIP AND TIME DELAY SETTINGS.

FUSES

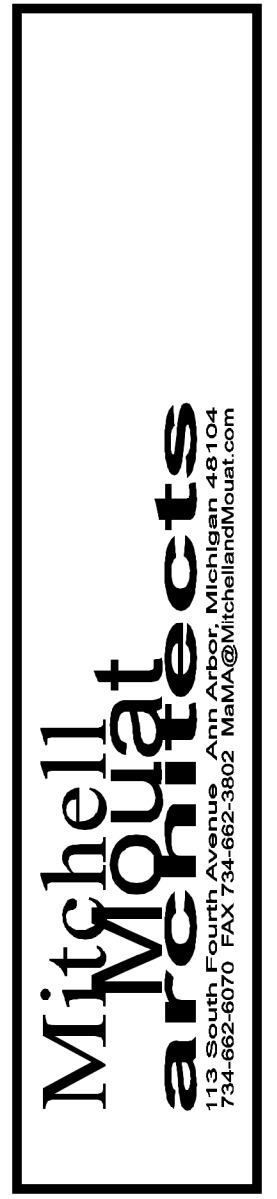
- A. OBTAIN FUSES FROM A SINGLE MANUFACTURER.
- B. COORDINATE FUSE RATINGS WITH UTILIZATION EQUIPMENT NAMEPLATE LIMITATIONS OF MAXIMUM FUSE SIZE.
- C. EXAMINE UTILIZATION EQUIPMENT NAMEPLATES AND INSTALLATION INSTRUCTIONS. INSTALL FUSES OF SIZES AND WITH CHARACTERISTICS APPROPRIATE FOR EACH PIECE OF EQUIPMENT.
- D. INSTALL LABELS INDICATING FUSE REPLACEMENT INFORMATION ON INSIDE DOOR OF EACH FUSED SWITCH.
- E. SUBJECT TO COMPLIANCE WITH REQUIREMENTS; PROVIDE PRODUCTS BY COOPER BUSSMAN, INC. OR EQUAL.
- F. CARTRIDGE FUSES: NEMA FU 1, NONRENEWABLE CARTRIDGE FUSE; CLASS AND CURRENT RATING INDICATED; VOLTAGE RATING CONSISTENT WITH CIRCUIT VOLTAGE.
 1. SERVICE ENTRANCE, CLASS L, TIME DELAY.
 2. FEEDERS: CLASS RK5 TIME DELAY.
 3. MOTOR BRANCH CIRCUITS: CLASS RK1, TIME DELAY.
 4. OTHER BRANCH CIRCUITS: CLASS RK1, TIME DELAY.
- G. COMPLY WITH:
 1. NEMA FU 1 - LOW VOLTAGE CARTRIDGE FUSES.
 2. NFPA 70 - NATIONAL ELECTRICAL CODE.
 3. UL 198C - HIGH-INTERRUPTING-CAPACITY FUSES, CURRENT-LIMITING TYPES.
 4. UL 198E - CLASS R FUSES.
 5. UL 512 - FUSEHOLDERS.

LIGHTING

- A. PROVIDE LUMINAIRES (LIGHTING FIXTURES) AS INDICATED ON DRAWINGS.
- B. PROVIDE DRIVERS AS AN INTEGRATED COMPONENT OF THE LUMINAIRE OR AS AN EXTERNAL COMPONENT OF AN ASSEMBLY OF LUMINAIRES.
- C. INSTALL FIXTURES LEVEL, PLUMB, AND SQUARE WITH CEILINGS AND WALLS UNLESS OTHERWISE INDICATED.
- D. SUPPORT LUMINAIRES INDEPENDENT OF CEILING FRAMING. SUPPORT RECESSED GRID LUMINAIRES FROM TWO OPPOSITE CORNERS DIRECTLY TO STRUCTURE. WIRE OR ROD SHALL HAVE BREAKING STRENGTH OF THE WEIGHT OF FIXTURE AT A SAFETY FACTOR OF 3.
- E. INSTALL RECESSED LUMINAIRES TO PERMIT REMOVAL FROM BELOW.

- F. INSTALL RECESSED LUMINAIRES USING ACCESSORIES AND FIRESTOPPING MATERIALS TO MEET REGULATORY REQUIREMENTS FOR FIRE RATING.
- G. INSTALL SURFACE MOUNTED LUMINAIRES AND EXIT SIGNS PLUMB AND ADJUST TO ALIGN WITH BUILDING LINES AND WITH EACH OTHER. SECURE TO PROHIBIT MOVEMENT.
- H. 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 488A AND UL 488B.
- I. MAKE WIRING CONNECTIONS TO BRANCH CIRCUIT USING BUILDING WIRE WITH INSULATION SUITABLE FOR TEMPERATURE CONDITIONS WITHIN LUMINAIRE.
- J. BOND PRODUCTS AND METAL ACCESSORIES TO BRANCH CIRCUIT EQUIPMENT GROUNDING CONDUCTOR.
- K. CONNECT LUMINAIRES TO BRANCH CIRCUIT OUTLET BOXES PROVIDED UNDER RACEWAYS AND BOXES SECTION USING 1/2" FLEXIBLE CONDUIT.
- L. CLEAN ELECTRICAL PARTS TO REMOVE CONDUCTIVE AND DELETERIOUS MATERIALS.
- M. REMOVE DIRT AND DEBRIS FROM ENCLOSURES AND LENSES.
- N. CLEAN PHOTOMETRIC CONTROL SURFACES AS RECOMMENDED BY MANUFACTURER.
- O. CLEAN FINISHES AND TOUCH UP DAMAGE.
- P. EXIT SIGNS: COMPLY WITH UL 924; FOR SIGN COLORS AND LETTERING SIZE, COMPLY WITH AUTHORITIES HAVING JURISDICTION.
 1. PROVIDE EXIT SIGNS WITH LIGHT-EMITTING DIODES, 70,000 HOURS MINIMUM OF RATED LAMP LIFE.
 2. SELF-POWERED EXIT SIGNS (BATTERY TYPE): INTEGRAL AUTOMATIC CHARGER IN A SELF-CONTAINED POWER PACK.
 3. BATTERY: SEALED, MAINTENANCE-FREE, NICKEL-CADMIUM TYPE WITH SPECIAL WARRANTY.
 4. CHARGER: FULLY AUTOMATIC, SOLID-STATE TYPE WITH SEALED TRANSFER RELAY.
 5. OPERATION: RELAY AUTOMATICALLY ENERGIZES LAMP FROM BATTERY WHEN CIRCUIT VOLTAGE DROPS TO 80 PERCENT OF NOMINAL VOLTAGE OR BELOW. WHEN NORMAL VOLTAGE IS RESTORED, RELAY DISCONNECTS LAMPS FROM BATTERY, AND BATTERY IS AUTOMATICALLY RECHARGED AND FLOATED ON CHARGER.
- Q. EMERGENCY LIGHTING UNITS: SELF-CONTAINED UNITS COMPLYING WITH UL 924.
 1. BATTERY: SEALED, MAINTENANCE-FREE, LEAD-ACID TYPE WITH MINIMUM 10-YEAR NOMINAL LIFE AND SPECIAL WARRANTY.
 2. CHARGER: FULLY AUTOMATIC, SOLID-STATE TYPE WITH SEALED TRANSFER RELAY.
 3. OPERATION: RELAY AUTOMATICALLY TURNS LAMP ON WHEN POWER SUPPLY CIRCUIT VOLTAGE DROPS TO 80 PERCENT OF NOMINAL VOLTAGE OR BELOW. LAMP AUTOMATICALLY DISCONNECTS FROM BATTERY WHEN VOLTAGE APPROACHES DEEP-DISCHARGE LEVEL. WHEN NORMAL VOLTAGE IS RESTORED, RELAY DISCONNECTS LAMPS FROM BATTERY, AND BATTERY IS AUTOMATICALLY RECHARGED AND FLOATED ON CHARGER.
- R. EMERGENCY LIGHTING FIXTURES: SELF-CONTAINED, MODULAR, BATTERY-INVERTER UNIT FACTORY MOUNTED WITHIN FIXTURE BODY. COMPLY WITH UL 924.
 1. TEST SWITCH AND LIGHT-EMITTING-DIODE INDICATOR LIGHT: VISIBLE AND ACCESSIBLE WITHOUT OPENING FIXTURE OR ENTERING CEILING SPACE. INSTALL REMOTE TEST SWITCH AND PLATE IN ADJACENT CEILING TILE.
 2. BATTERY: SEALED, MAINTENANCE-FREE, NICKEL-CADMIUM TYPE WITH MINIMUM SEVEN-YEAR NOMINAL LIFE.
 3. CHARGER: FULLY AUTOMATIC, SOLID-STATE, CONSTANT-CURRENT TYPE.
 4. UNIVERSAL TRANSFORMER TO OPERATE AT 120 VOLT OR 277 VOLT.

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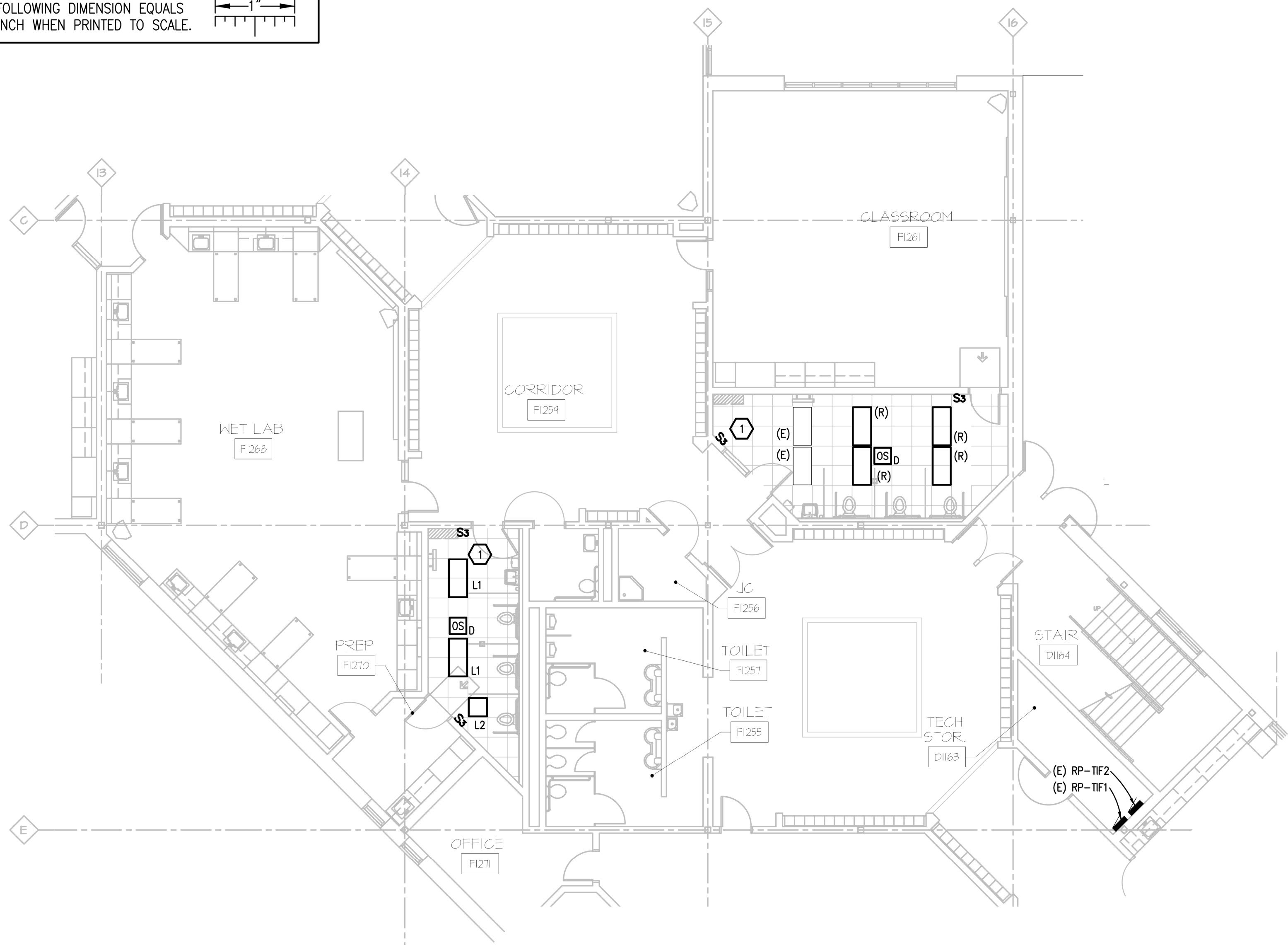
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 Ypsilanti MI 48198
 Project Number: 1916

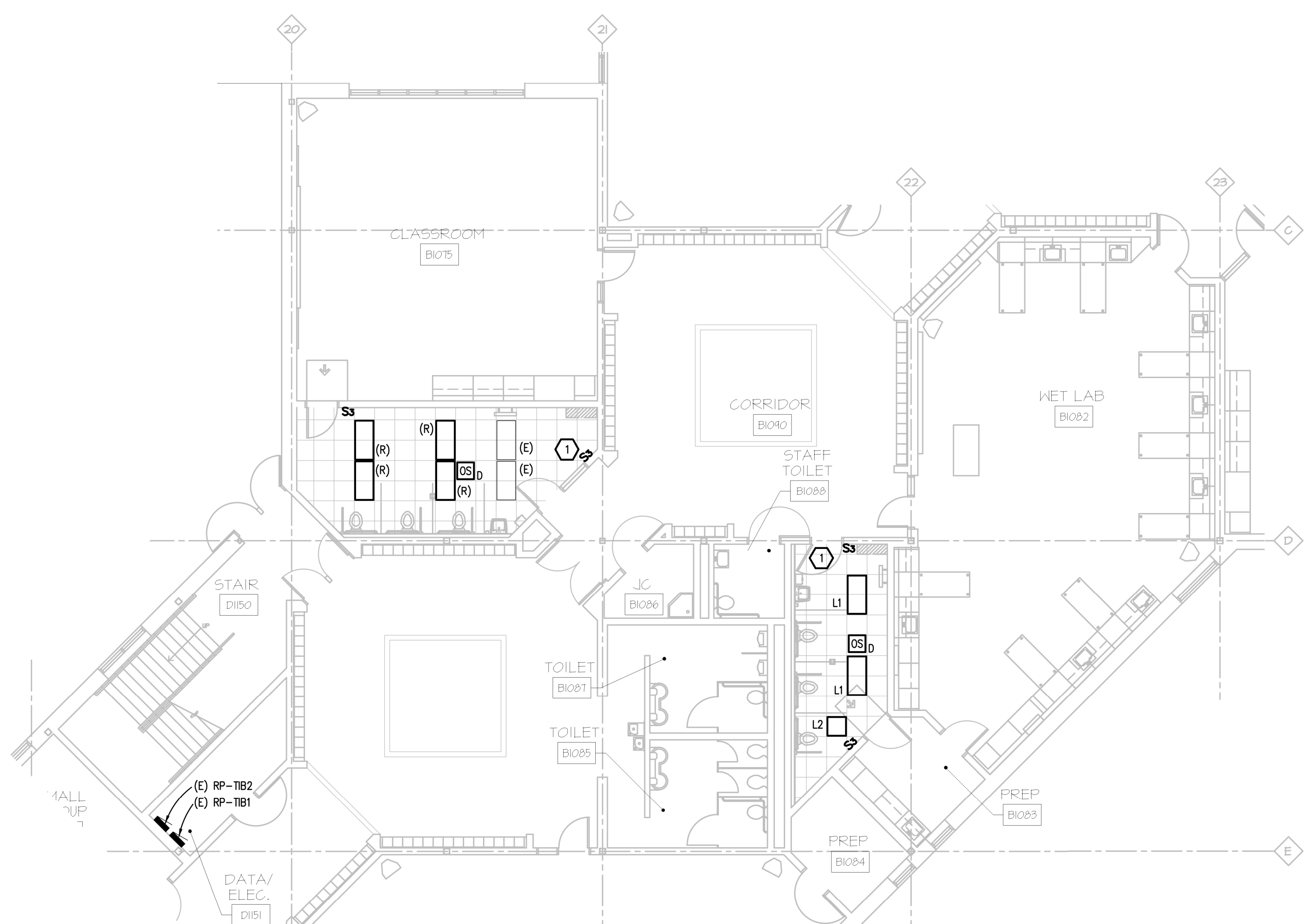
ELECTRICAL SPECIFICATIONS
 E0.3



THE FOLLOWING DIMENSION EQUALS ONE INCH WHEN PRINTED TO SCALE.



AREA F
FIRST FLOOR LIGHTING PLAN
 SCALE: 1/8" = 1' - 0"



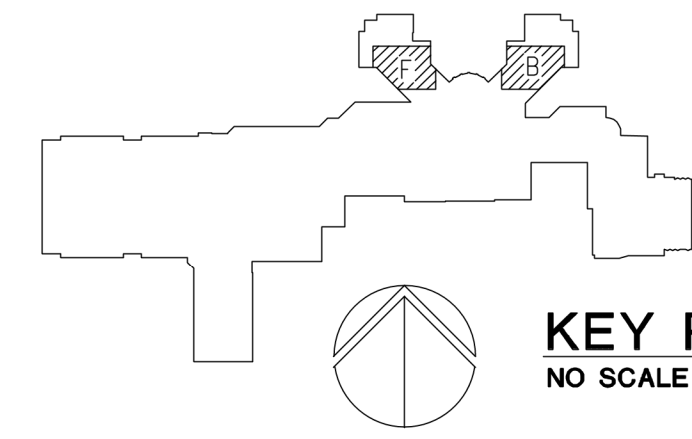
AREA B
FIRST FLOOR LIGHTING PLAN
 SCALE: 1/8" = 1' - 0"

ELECTRICAL GENERAL NOTES:

1. THESE DRAWINGS REPRESENT THE GENERAL EXTENT AND ARRANGEMENT OF SYSTEMS, BUT ARE NOT TO BE CONSIDERED FABRICATION DRAWINGS. COORDINATE WITH OTHER TRADES, AND PROVIDE EACH SYSTEM COMPLETE, INCLUDING ALL NECESSARY COMPONENTS, FITTINGS, AND OFFSETS.
2. INSTALL SYSTEMS SUCH THAT REQUIRED CLEARANCE AND SERVICE ACCESS SPACE IS PROVIDED AROUND ALL MECHANICAL AND ELECTRICAL EQUIPMENT, AND AROUND ANY COMPONENTS WHICH REQUIRE SERVICE ACCESS.
3. COORDINATE AND PROVIDE ACCESS DOORS WITHIN INACCESSIBLE CEILING, SHAFT, AND CHASE AREAS FOR ALL COMPONENTS WHICH REQUIRE SERVICE ACCESS. REFER TO ARCHITECTURAL DRAWINGS FOR CEILING TYPES.
4. PROVIDE SUPPLEMENTARY STEEL AS REQUIRED FOR THE PROPER SUPPORT OF ALL SYSTEMS.
5. MOTOR CIRCUIT PROTECTION SHALL BE SIZED IN ACCORDANCE WITH MOTOR CIRCUIT SIZING SCHEDULES SHOWN ON "ELECTRICAL STANDARD SCHEDULES DRAWING" UNLESS OTHERWISE NOTED.
6. COORDINATE THE MOUNTING HEIGHTS OF DEVICES WITH ARCHITECTURAL ELEVATIONS AND THE TRADES INSTALLING THE WORK.
7. REFER TO MECHANICAL SCHEDULE SHEETS FOR ELECTRICAL REQUIREMENTS FOR MECHANICAL EQUIPMENT. PROVIDE ALL CONNECTIONS, STARTERS, DISCONNECTS, ETC. AS REQUIRED BY SCHEDULES AND WHERE NOTED ELSEWHERE. VERIFY REQUIREMENTS OF ALL MECHANICAL EQUIPMENT WITH SHOP DRAWINGS SUBMITTALS. NOTIFY ENGINEER OF ANY CONFLICTS BETWEEN EQUIPMENT SUBMITTALS AND ELECTRICAL DRAWINGS. WHERE CIRCUIT SIZES ARE SHOWN ON THE ELECTRICAL DRAWINGS THAT DIFFER FROM WHAT IS INDICATED ON THE MECHANICAL SCHEDULES, PROVIDE THE CIRCUIT OF HIGHER AMPACITY.
8. REFER TO TEMPERATURE CONTROLS SHEETS FOR REQUIRED MOTOR CONTROLLERS. PROVIDE ALL ACCESSORIES INDICATED.

CONSTRUCTION KEY NOTES:

1. REPLACE SINGLE POLE TOGGLE SWITCH WITH 3 WAY TOGGLE SWITCH. REVISE SWITCH LEG AS REQUIRED FOR WORK INDICATED.



KEY PLAN
 NO SCALE



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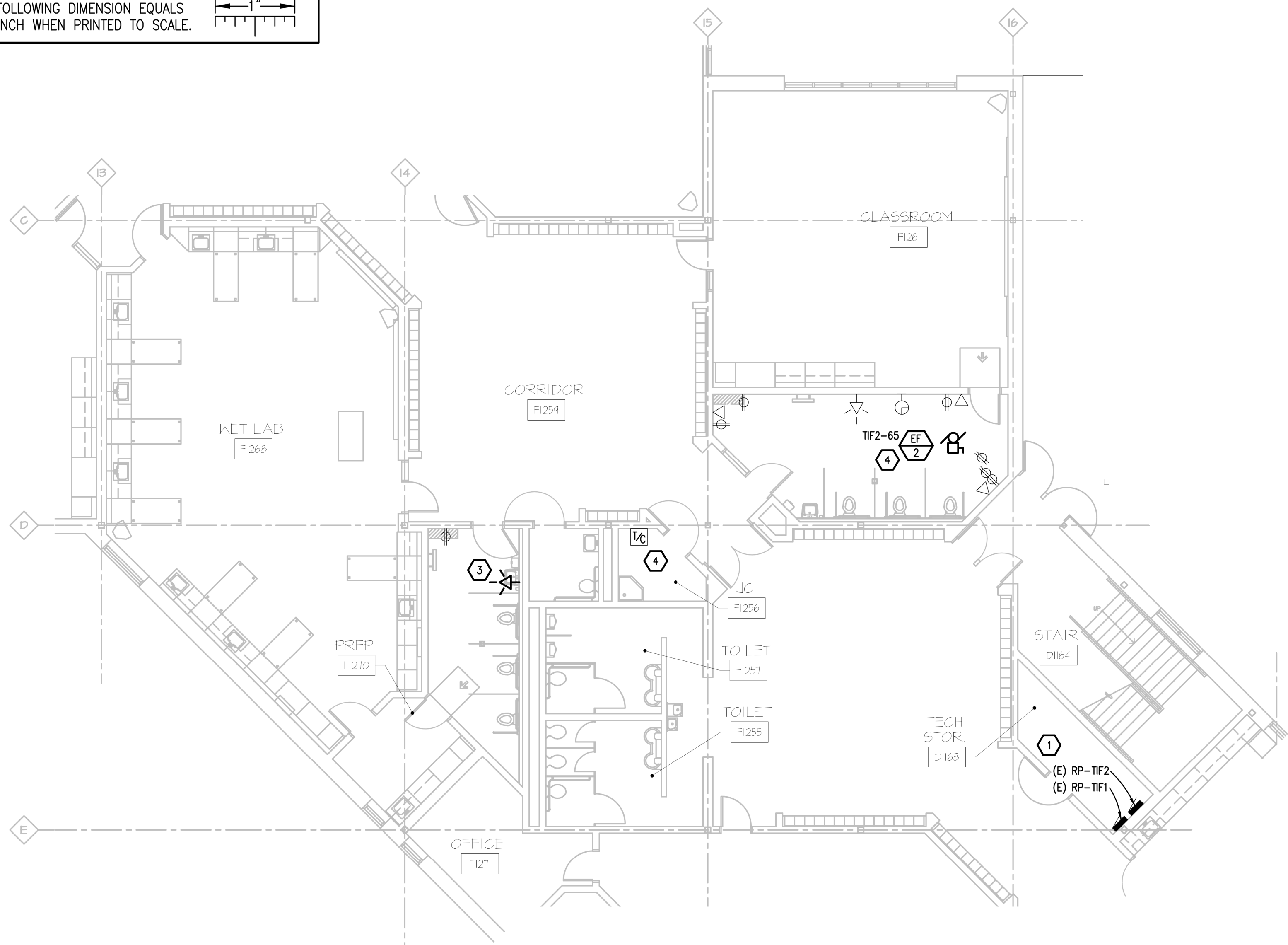
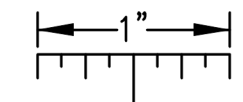
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FIRST FLOOR LIGHTING PLAN

E2.1

THE FOLLOWING DIMENSION EQUALS ONE INCH WHEN PRINTED TO SCALE.



**AREA F
FIRST FLOOR POWER PLAN**

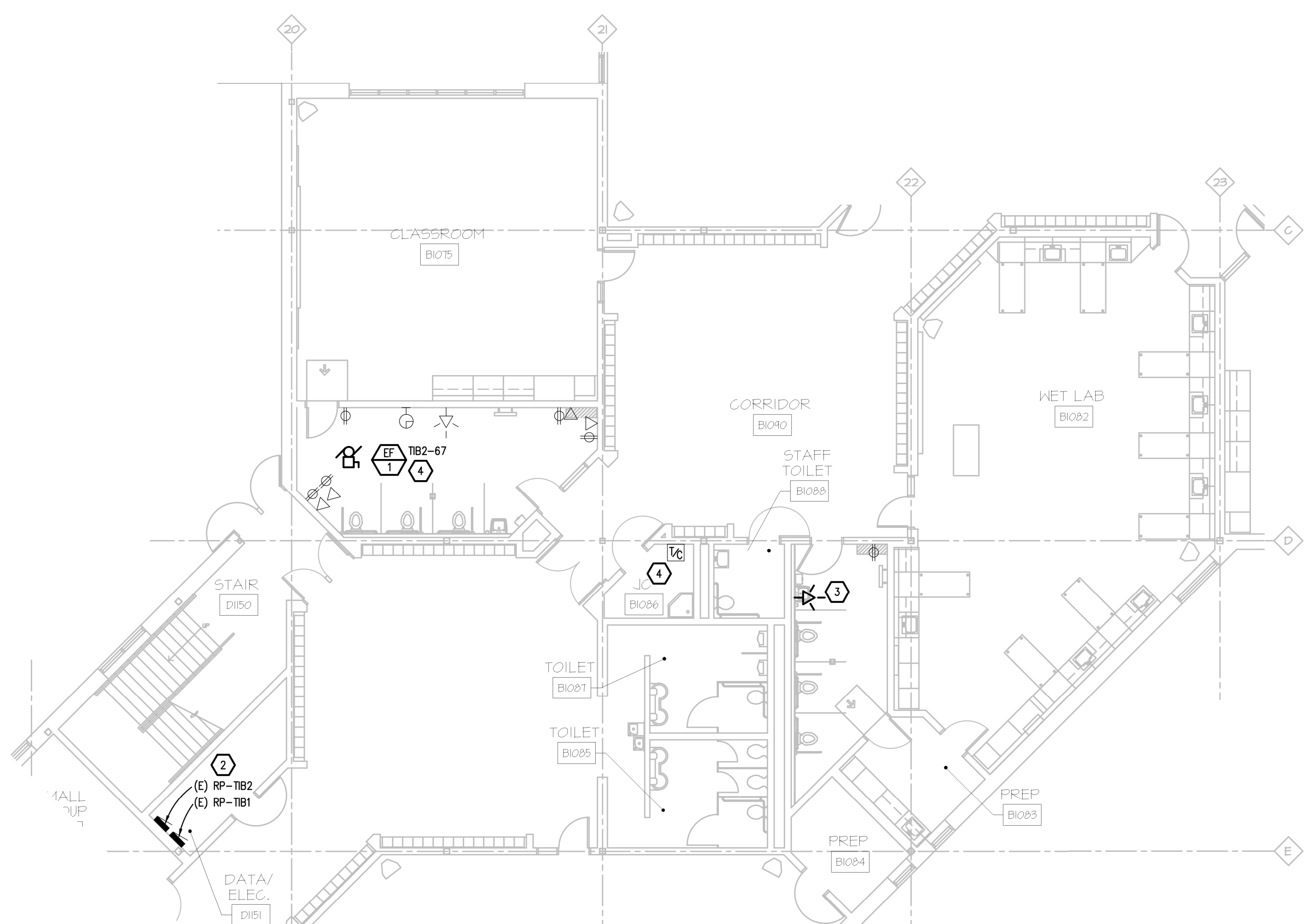
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ELECTRICAL GENERAL NOTES:

1. THESE DRAWINGS REPRESENT THE GENERAL EXTENT AND ARRANGEMENT OF SYSTEMS, BUT ARE NOT TO BE CONSIDERED FABRICATION DRAWINGS. COORDINATE WITH OTHER TRADES, AND PROVIDE EACH SYSTEM COMPLETE, INCLUDING ALL NECESSARY COMPONENTS, FITTINGS, AND OFFSETS.
2. INSTALL SYSTEMS SUCH THAT REQUIRED CLEARANCE AND SERVICE ACCESS SPACE IS PROVIDED AROUND ALL MECHANICAL AND ELECTRICAL EQUIPMENT, AND AROUND ANY COMPONENTS WHICH REQUIRE SERVICE ACCESS.
3. COORDINATE AND PROVIDE ACCESS DOORS WITHIN INACCESSIBLE CEILING, SHAFT, AND CHASE AREAS FOR ALL COMPONENTS WHICH REQUIRE SERVICE ACCESS. REFER TO ARCHITECTURAL DRAWINGS FOR CEILING TYPES.
4. PROVIDE SUPPLEMENTARY STEEL AS REQUIRED FOR THE PROPER SUPPORT OF ALL SYSTEMS.
5. MOTOR CIRCUIT PROTECTION SHALL BE SIZED IN ACCORDANCE WITH MOTOR CIRCUIT SIZING SCHEDULES SHOWN ON "ELECTRICAL STANDARD SCHEDULES DRAWING" UNLESS OTHERWISE NOTED.
6. COORDINATE THE MOUNTING HEIGHTS OF DEVICES WITH ARCHITECTURAL ELEVATIONS AND THE TRADES INSTALLING THE WORK.
7. REFER TO MECHANICAL SCHEDULE SHEETS FOR ELECTRICAL REQUIREMENTS FOR MECHANICAL EQUIPMENT. PROVIDE ALL CONNECTIONS, STARTERS, DISCONNECTS, ETC. AS REQUIRED BY SCHEDULES AND WHERE NOTED ELSEWHERE. VERIFY REQUIREMENTS OF ALL MECHANICAL EQUIPMENT WITH SHOP DRAWINGS SUBMITTALS. NOTIFY ENGINEER OF ANY CONFLICTS BETWEEN EQUIPMENT SUBMITTALS AND ELECTRICAL DRAWINGS. WHERE CIRCUIT SIZES ARE SHOWN ON THE ELECTRICAL DRAWINGS THAT DIFFER FROM WHAT IS INDICATED ON THE MECHANICAL SCHEDULES, PROVIDE THE CIRCUIT OF HIGHER AMPACITY.
8. REFER TO TEMPERATURE CONTROLS SHEETS FOR REQUIRED MOTOR CONTROLLERS. PROVIDE ALL ACCESSORIES INDICATED.

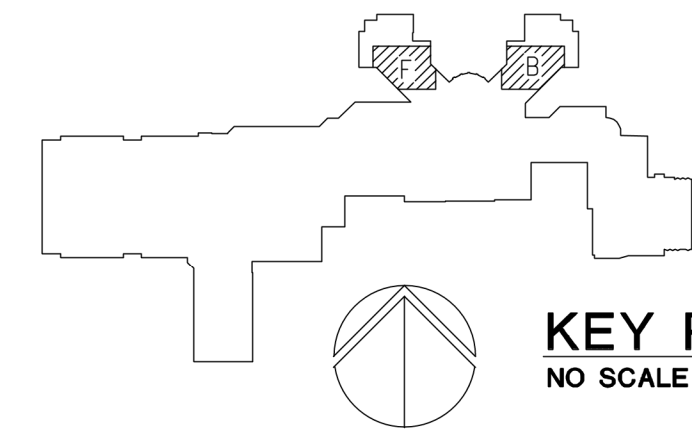
CONSTRUCTION KEY NOTES:

1. IN RP-TIF2 REPLACE 20 AMP SINGLE POLE SPARE CIRCUIT BREAKER WITH 15 AMP SINGLE POLE CIRCUIT BREAKER.
2. IN RP-TIB2 PROVIDE 15 AMP SINGLE POLE CIRCUIT BREAKER.
3. WALL BEING FURRED OUT RELOCATE EXISTING FIRE ALARM DEVICE TO FURRED OUT WALL. EXTEND CONDUIT AND WIRE AS REQUIRED.
4. ROUTE EXHAUST FAN BRANCH CIRCUIT THROUGH TIME CLOCK PROVIDED BY OTHERS.

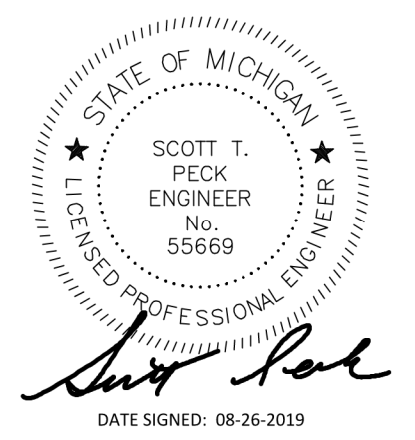


**AREA B
FIRST FLOOR POWER PLAN**

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



**KEY PLAN
NO SCALE**



DATE SIGNED: 08-26-2019
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FIRST FLOOR POWER PLAN

E3.1

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