

560 5th St. NW // Suite 305 // Grand Rapids, MI 49504 616.827.4270

www.bergmannpc.com



ORCHARD VIEW SCHOOL DISTRICT

MIDDLE SCHOOL KITCHEN RENOVATIONS 35 S SHERIDAN DR MUSKEGON, MI 49442

2/15/2023

PROJECT CONTACT LIST

- ORCHARD VIEW SCHOOLS

MUSKEGON, MI - CONTACT:

KAYLEIGH MACOMBER JACK TIMMER

<u>ELECTRICAL ENGINEER:</u> - BERGMANN

- 560 5TH ST, SUITE 305 GRAND RAPIDS, MI

- CONTACT: ANGELA ROBINSON

- PHONE: 517.827.8726

STRUCTURAL ENGINEER: - BERGMANN

- 560 5TH ST, SUITE 305

- CONTACT: KIRA TENNES - PHONE: 517.272.9835

<u>ARCHITECT:</u> - BERGMANN

- 560 5TH ST, SUITE 305 GRAND RAPIDS, MI

- CONTACT: BUDDY HUYLER

- PHONE: 616.848.6969

MECHANICAL ENGINEER:
- ABILITY ENGINEERING

- 5210 W RIVER DR NE, SUITE C

COMSTOCK PARK, MI

- CONTACT: CHRIS NOLAN

- PHONE: 616.232.5817

FOOD SERVICE CONSULTANT:
- JRA FOOD SERVICE CONSULTANTS

- 3113 W RIVER ROAD

MUSKEGON, MI

- CONTACT: JIM RIEMENSCHNEIDER

- PHONE: 616.454.4433

PROJECT LOCATION MAP



	OF MECHANICAL					
		CHANICAL INFORMATION				
M001 GENERAL MECHANICAL INFORMATION						
	M101 MECHANICAL PLANS					
	06 - PLU					
	P001	GENERAL PLUMBING INFORMATION				
	P101	PLUMBING PLANS				
		CTRICAL				
	E001	LEGEND				
	E002	SPECIFICATIONS				
	ED101	FIRST FLOOR PLAN - AREA A - ELECTRICAL				
		DEMOLITION				
	E101	FIRST FLOOR PLAN - AREA A - POWER				
	E201	FIRST FLOOR PLAN - AREA A - LIGHTING				
	E501	ENLARGED KITCHEN PLANS - POWER				
	E601	ONE-LINE DIAGRAM				
	E801	SCHEDULES				
	11 - FOOD SERVICE (REFERENCE ONLY)					
	FSE-1	FOOD SERVICE EXISTING CONDITIONS FLOOR PLAN				
	FSE-2	FOOD SERVICE EQUIPMENT FLOOR PLAN				
	FSE-3	FOOD SERVICE EQUIPMENT FLOOR PLAN				
	FOOD SERVICE ELECTRICAL FLOOR PLAN					
	FSE-5	FOOD SERVICE PLUMBING FLOOR PLAN				
	FSE-6	FOOD SERVICE REFRIGERATION FLOOR PLAN				
	FSE-7	FOOD SERVICE EQUIPMENT DETAILS				

DRAWING INDEX

G001 CODE COMPLIANCE & LIFE SAFETY PLANS

G000 COVER SHEET

S101 STRUCTURAL PLANS

04 - ARCHITECTURAL

A103 ROOF PLAN

S201 STRUCTURAL DETAILS

A001 GENERAL NOTES AND LEGENDS

A101 FIRST FLOOR AND CEILING PLANS

A321 WALL SECTIONS AND DOOR DETAILS

AD101 FIRST FLOOR AND CEILING DEMOLITION PLANS

A002 GENERAL REQUIREMENTS

A141 FIRST FLOOR FINISH PLAN

DATE	DESCRIPTION
1/24/2023	OWNER REVIEW
1/31/2023	BIDS
2/7/2023	PERMITS
2/15/2023	ADDENDUM #1

G000

BUILDING CODE SUMMARY

	PROJECT INFORMATION:				
	PROJECT NAME:		MIDDLE SCHOOL KITCHEN RENOVATIONS		
	PROJECT NUMBER:		016633.00		
	PREPARED BY:	ΕP	OST	CHECKED BY:	D HOLTROP
Ī	DATE:	12/	14/2022	DATE:	1/24/3023

OCCUPANCY CLASSIFICATION AND MIXED OCCUPANCIES: (CHAPTERS 3 & 5)					
SINGLE	☐ ACCESSORY - GROUP	; % OF FLOOR AREA			
X MIXED OCCUPANCY	SEPARATED X NO	N-SEPARATED	IBINATION		
IF SEPARATED, FIRE RES	SISTANCE RATING OF FIRE BARF	RIER: (TABLE 508.4)	HR		
OCCUPANCY CLASSIFICA	ATION(S): <u>E, A-2</u>				
USES: E - EDUCATION	IAL, A-2 - ASSEMBLY				

AUTOMATIC SPRINKLER SYSTEM PROVIDED THROUGHOUT BUILDING: YES NO						
PARTIAL/LIMITED-AREA SPRINKLER SYSTEM: YES X NO						
NFPA STANDARD:	<u> </u>	☐ 13R	ALT. FIRE PROTECTION SYSTEM:			

MEANS OF EGRESS: (CHAPTER 10)							
MEANS OF EGRESS ELEMENT	REQUIRED	PROVIDED	SECTION				
EXIT ACCESS TRAVEL DISTANCE	200'	PER PLANS	(TABLE 1017.2)				
DEAD-END LIMIT	20'	N/A	(1020.4)				
COMMON PATH OF TRAVEL LIMIT	75'		(1006.2.1)				

CONSTRUCTION SAFETY COMPLIANCE WITH:	
☑ CHAPTER 33 SAFE GUARDS DURING CONSTRUCTION OF THE IBC	
X CHAPTER 33 FIRE SAFETY DURING CONSTRUCTION AND DEMOLITION OF THE IFC	

INTERIOR FINISH:			(CHAPTER 8)
WALL AND CEILING			
OCCUPANCY: A	\-2		
FINISH CLASS	LOCATION		
A A	X EXITS	X CORRIDORS/ EXIT ACCESS	☐ ROOMS/ SPACES
<u></u> В в	EXITS	CORRIDORS/ EXIT ACCESS	X ROOMS/ SPACES
□ C	☐ EXITS	☐ CORRIDORS/ EXIT ACCESS	☐ ROOMS/ SPACES
FLOORING			
FINISH CLASS	OCCUPANO	IES	
	☐ ALL	GROUPS:	
X II	X ALL	GROUPS:	
☐ DOC FF-1	│	GROUPS:	

REHABILITATION OF EXISTING STRUCTURES	S :		
PER THE 2015 MICHIGAN RAHABILITATION C	ODE FOR EXISTIN	G BUILDINGS (2015 EIBC)	
REPAIRS (CHAPTER 6)			
ALTERATIONS - LEVEL 1 (CHAPTER 7)			
X ALTERATIONS - LEVEL 2 (CHAPTER 8)			
ALTERATIONS - LEVEL 3 (CHAPTER 9)			
CHANGE OF OCCUPANCY (CHAPTER 10)			
FORMER OCCUPANCY CLASSIFICATION	I(S):		
NEW OCCUPANCY CLASSIFICATION(S):			
PARTIAL CHANGE OF OCCUPANCY:	YES	□NO	
IF YES: ☐ SEPARATED ☐ NO	T SEPARATED		
ADDITIONS (CHAPTER 11)			
SEPARATED ADDITION:	YES	□NO	
IF YES, FIRE RESISTENCE RATING:	_	_	
	☐ FIRE WALL		HF
	☐ FIRE BARRIEF	{	HF
HISTORIC BUILDING (CHAPTER 12)			
RELOCATED BUILDING (CHAPTER 13)			
ACCESSIBILITY UPGRADES: COMPLY WITH	Н		
SECTION 410 AND ADDENDA	• •		

PROJECT SCOPE

INTERIOR RENOVATIONS IN MIDDLE SCHOOL KITCHEN AND CAFETERIA, FOCUSING ON THE EXPANSION OF THE EXISTING KITCHEN SERVING AREA INTO THE CAFETERIA. THERE WILL BE NEW EQUIPMENT, CEILINGS, AND FLOORING IN THE NEW SERVING AREA, INCLUDING DEMOLITION AND ADDITION OF WALLS AND DOORS. NEW ROOF TOP UNITS WILL BE ADDED TO PROVIDE AIR CONDITIONING IN THE KITCHEN AND SERVING AREAS.

APPLICABLE BUILDING CODES

BUILDING CODE:	2015 MICHIGAN BUILDING CODE 2015 MICHIGAN REHABILITATION CODE
DI III DINIC CODE (MI FIDE SAF	
BUILDING CODE (IVII FIRE SAFI	ETY STATE RULES): NFPA 11-2012
MECHANICAL CODE:	2015 MICHIGAN MECHANICAL CODE
ELECTRICAL CODE:	2015 NATIONAL ELECTRICAL CODE &
	MICHIGAN PART 8 ELECTRICAL RULES
PLUMBING CODE:	2018 MICHIGAN PLUMBING CODE
ENERGY CODE:	2015 MICHIGAN ENERGY CODE
ACCESSIBILITY:	BARRIER FREE - ICC / ANSI-117

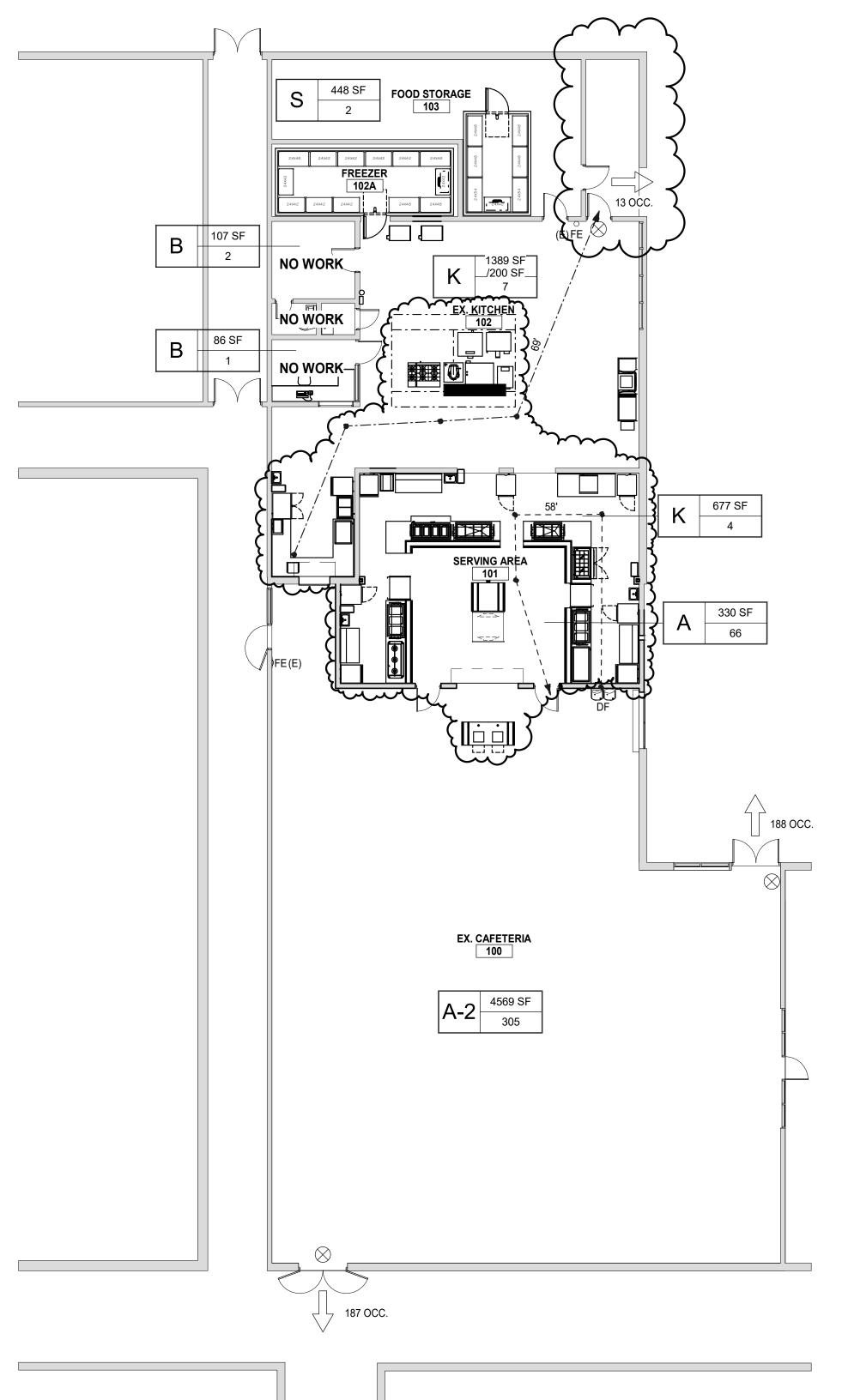
BUILDING DATA

TOTAL BUILDING AREA: 119,367 SQ/FT TOTAL RENOVATION AREA: 7,240 SQ/FT

CONSTRUCTION TYPE = II B (NON-COMBUSTIBLE) N.S.

USE AND OCCUPANCY

BUILDING IS CLASSIFIED AS EDUCATIONAL "E"



CODE COMPLIANCE DIAGRAM - FIRST FLOOR

SCALE: 3/32" = 1'-0"



GENERAL NOTES

- 1. APPLICABLE CODES:
 - A. WORK SHALL CONFORM TO CURRENT EDITION; a. 2015 MICHIGAN BUILDING CODE (MBC)
 - b. 2015 MICHIGAN MECHANICAL CODE (MMC)c. 2018 MICHIGAN PLUMBING CODE (MPC)
 - d. 2017 NATIONAL ELECTRICAL CODE (NEC)
 & MICHIGAN PART 8 ELECTRICAL RULES
 - e. 2015 MICHIGAN ENERGY CODE
 - f. 2015 MICHIGAN REHABILITATION CODE
 - g. 2015 INTERNATIONAL FIRE CODEh. 2012 NFPA 101 LIFE SAFETY CODE
 - i. ICC/ANSI A117.1-2009 ACCESSIBILITY AND USABLE BUILDINGS AND FACILITIES
 - AS WELL AS WITH OTHER LOCAL, STATE, AND FEDERAL CODES AND REGULATIONS APPLICABLE TO THIS PROJECT.

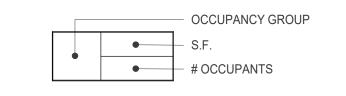
1. COMPLIANCE:

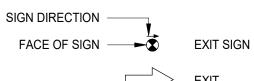
- A. PROVIDE FIRE EXTINGUISHERS IN CONFORMANCE WITH THE INTERNATIONAL FIRE CODE SECTION 906 AND COORDINATE WITH FIRE MARSHAL PRIOR TO INSTALLATION. DO NOT INSTALL FIRE EXTINGUISHERS UNTIL LOCATIONS HAVE BEEN REVIEWED AND APPROVED BY THE AUTHORITY HAVING JURISDICTION.
- B. OBTAIN ALL REQUIRED PERMITS AND PAYMENT OF PERMIT AND APPLICATION FEES FOR THE WORK.

2. CERTIFICATIONS:

- A. THE ARCHITECT'S CERTIFICATION IS ONLY FOR THE WORK SHOWN TO BE DONE. IT DOES NOT CONSTITUTE APPROVAL OF PRE-EXISTING CONDITIONS OR REVIEW OF THOSE CONDITIONS FOR CODE COMPLIANCE.
- B. THE ARCHITECT'S CERTIFICATION IS FOR COMPLIANCE WITH THE BUILDING CODE OF MICHIGAN AND ITS VARIOUS REFERENCE STANDARDS, FOR PURPOSES OF OBTAINING A BUILDING PERMIT THROUGH THE AUTHORITY HAVING JURISDICTION AND TO CONVEY CONSTRUCTION REQUIREMENTS FOR THE PROJECT. CERTIFICATION DOES NOT GUARANTEE COMPLIANCE WITH LOCAL CODES THAT MAY APPLY.

LEGEND





- CPET COMMON BATH OF EGRESS DISTAN
- COMMON PATH OF EGRESS DISTANCE

 EATD

 EXIT ACCESS TRAVEL DISTANCE
 (ALONG STAIRWAY NOSING AT OPEN STAIRWAYS)

 EIGHT EXTINGUISHED ON WALL BRACKET
- STAIRWAYS)

 FE FIRE EXTINGUISHER ON WALL BRACKET

 FIRE EXTINGUISHER CABINET





BERGMANN
ARCHITECTS ENGINEERS PLANNERS

560 5th St. NW Suite 305 Grand Rapids, MI 49504

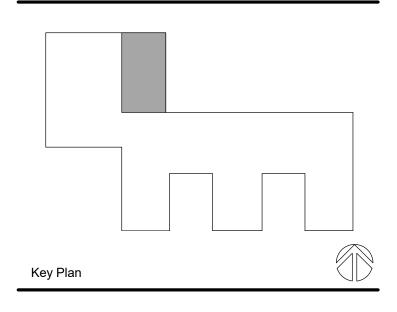
www.bergmannpc.com

ORCHARD VIEW SCHOOL DISTRICT

MIDDLE SCHOOL KITCHEN RENOVATIONS

35 S SHERIDAN DR MUSKEGON, MI 49442

Date Revised	Description	
1/24/2023	OWNER REVIEW	
1/31/2023	BIDS	
2/7/2023	PERMITS	
2/15/2023	ADDENDUM #1	



Copyright © Bergmann Associates, Architects, Engineers, Landscape Architects & Surveyors, D.P.C.

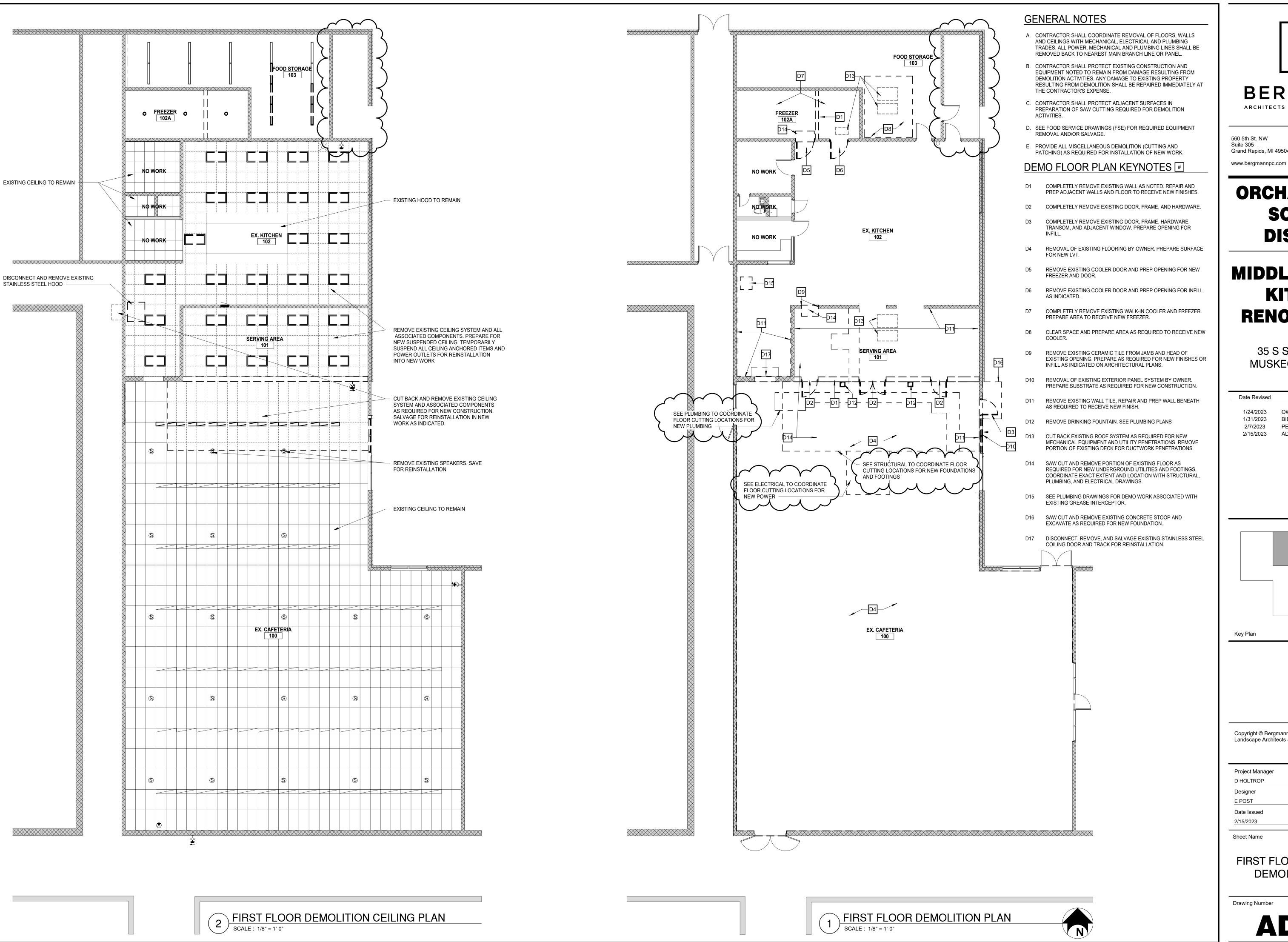
Project Manager	Discipline Lead
D HOLTROP	B HUYLER
Designer	Reviewer
E POST	
Date Issued	Project Number
2/15/2023	016633.00

Sheet Name

CODE COMPLIANCE & LIFE SAFETY PLANS

Drawing Numb

G001





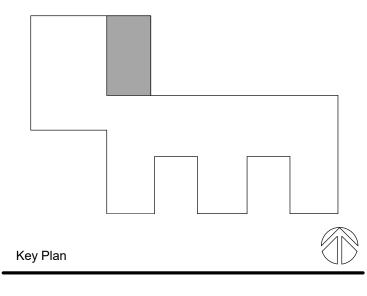
560 5th St. NW Grand Rapids, MI 49504

ORCHARD VIEW SCHOOL DISTRICT

MIDDLE SCHOOL **KITCHEN RENOVATIONS**

35 S SHERIDAN DR MUSKEGON, MI 49442

Date Revised	Description	
1/24/2023	OWNER REVIEW	
1/31/2023	BIDS	
2/7/2023	PERMITS	
2/15/2023	ADDENDUM #1	



Copyright © Bergmann Associates, Architects, Engineers, Landscape Architects & Surveyors, D.P.C.

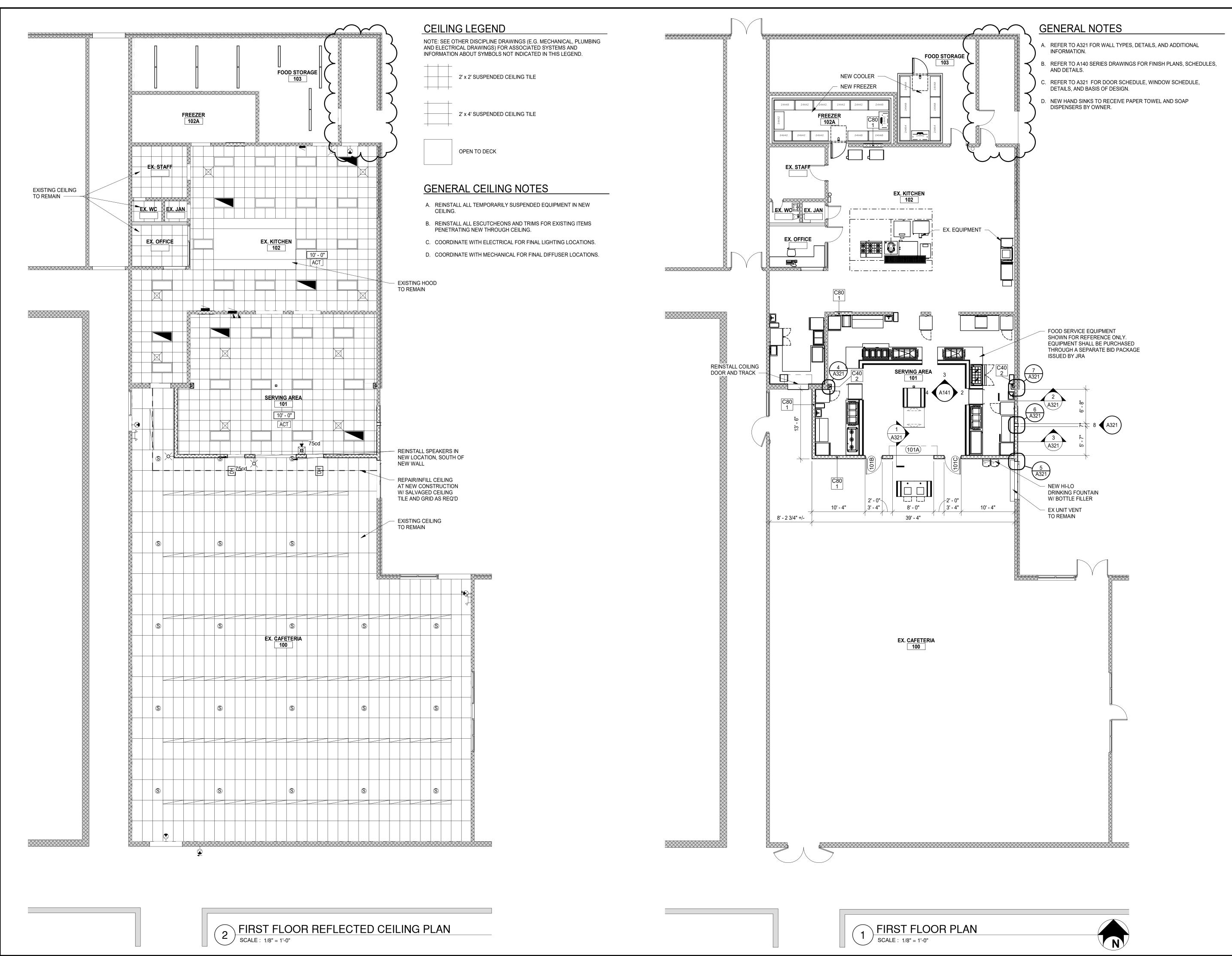
Project Manager	Discipline Lead
D HOLTROP	B HUYLER
Designer	Reviewer
E POST	R KEUNEKE
Date Issued	Project Number
2/15/2023	016633.00

Sheet Name

FIRST FLOOR AND CEILING **DEMOLITION PLANS**

Drawing Number

AD101





560 5th St. NW Suite 305 Grand Rapids, MI 49504

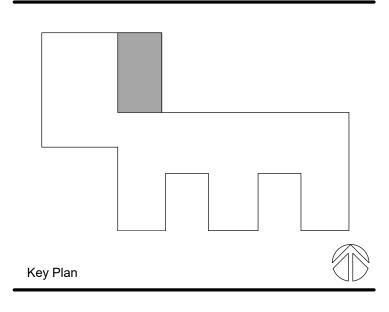
www.bergmannpc.com

ORCHARD VIEW SCHOOL DISTRICT

MIDDLE SCHOOL KITCHEN RENOVATIONS

35 S SHERIDAN DR MUSKEGON, MI 49442

Date Revised	Description		
1/24/2023	OWNER REVIEW		
1/31/2023	BIDS		
2/7/2023	PERMITS		
2/15/2023	ADDENDUM #1		



Copyright © Bergmann Associates, Architects, Engineers, Landscape Architects & Surveyors, D.P.C.

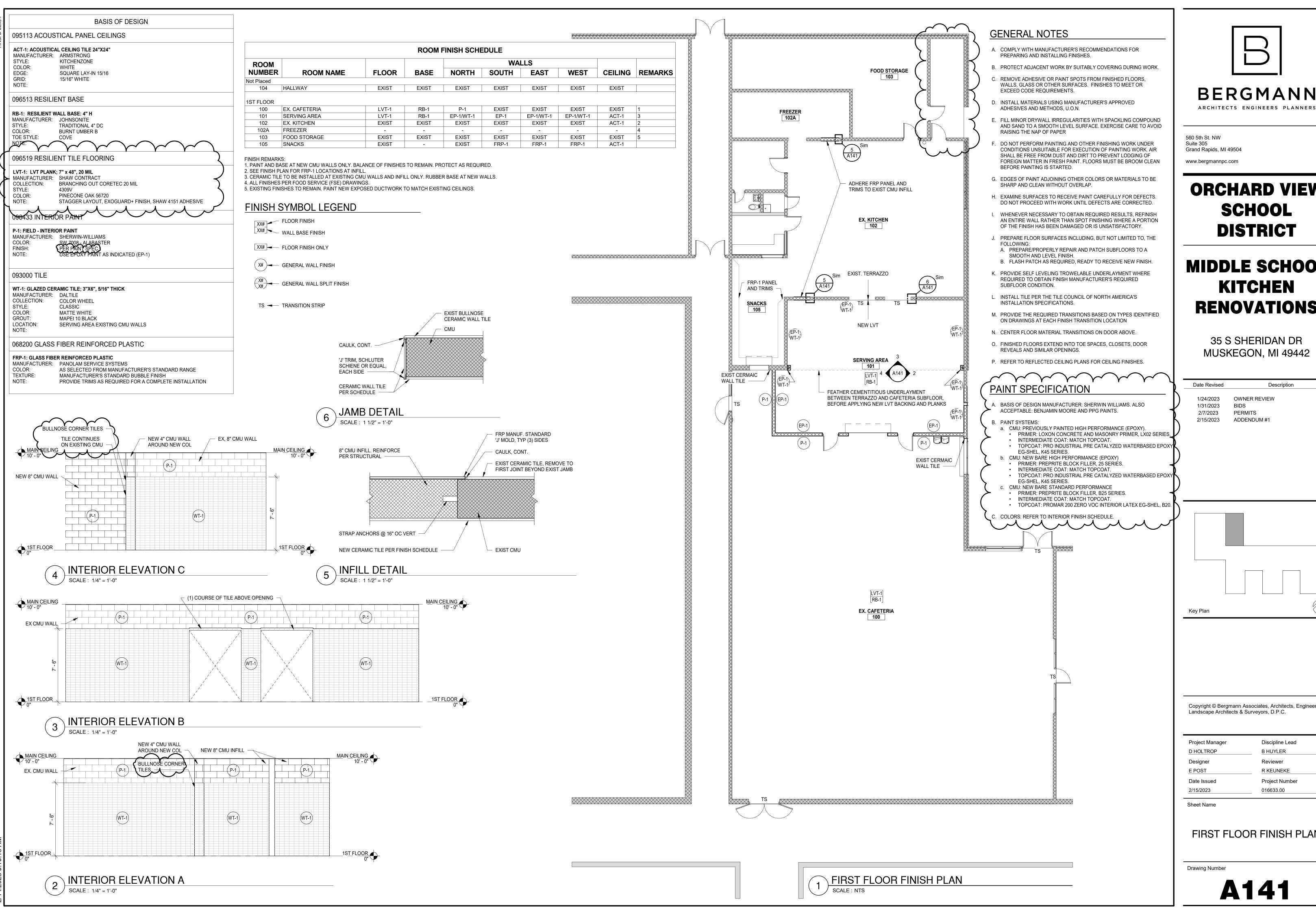
ı	Project Manager	Discipline Lead
	D HOLTROP	B HUYLER
	Designer	Reviewer
	E POST	R KEUNEKE
	Date Issued 2/15/2023	Project Number 016633.00
ı		

Sheet Name

FIRST FLOOR AND CEILING PLANS

Drawing Number

A101



BERGMANN

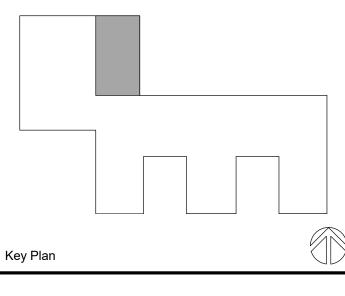
www.bergmannpc.com

ORCHARD VIEW SCHOOL DISTRICT

MIDDLE SCHOOL **KITCHEN RENOVATIONS**

35 S SHERIDAN DR MUSKEGON, MI 49442

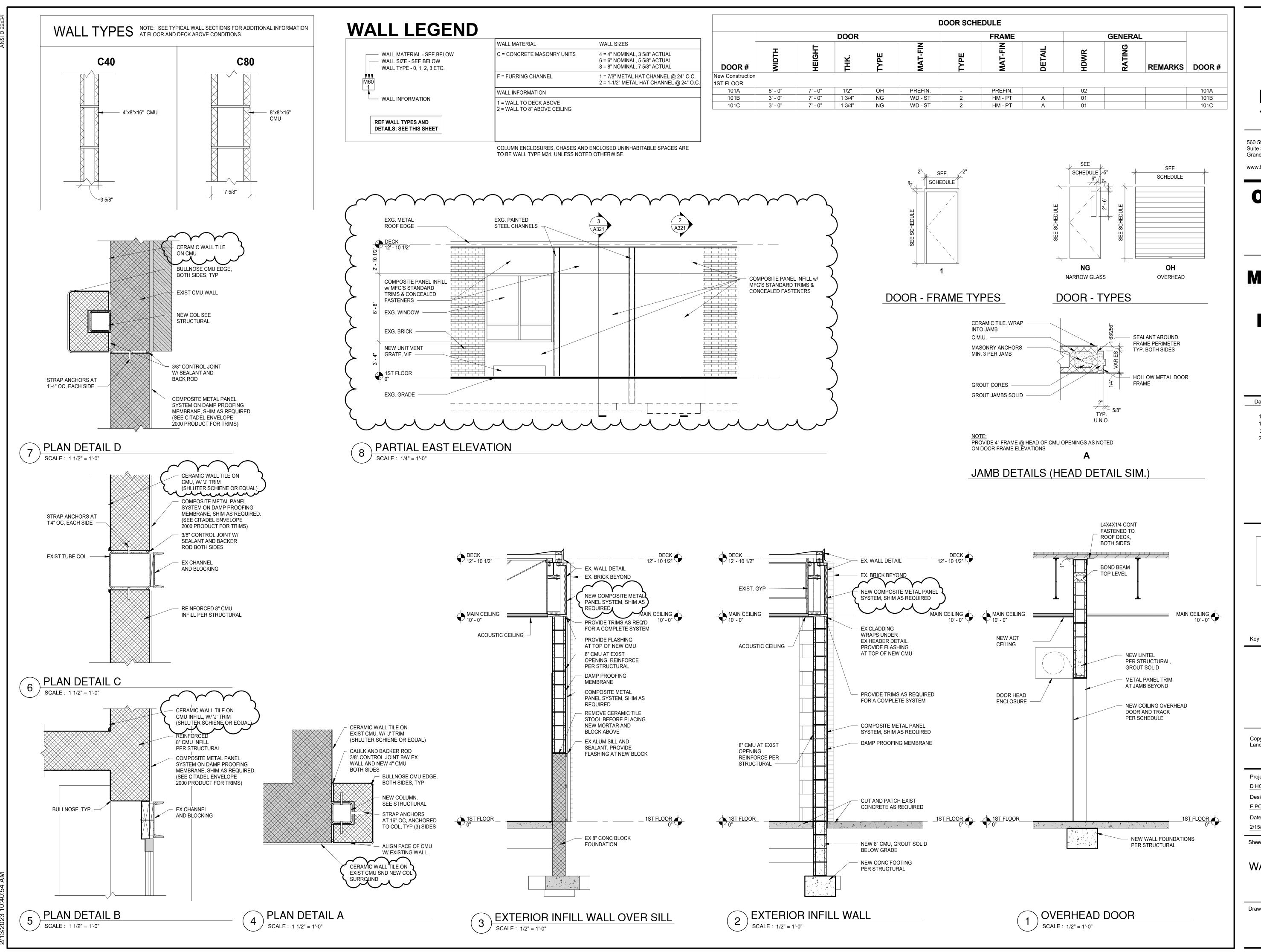
Description OWNER REVIEW BIDS PERMITS ADDENDUM #1



Copyright © Bergmann Associates, Architects, Engineers, Landscape Architects & Surveyors, D.P.C.

Discipline Lead
B HUYLER
Reviewer
R KEUNEKE
Project Number
016633.00

FIRST FLOOR FINISH PLAN





560 5th St. NW Suite 305 Grand Rapids, MI 49504

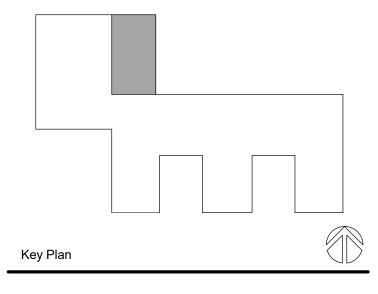
www.bergmannpc.com

ORCHARD VIEW SCHOOL DISTRICT

MIDDLE SCHOOL KITCHEN RENOVATIONS

35 S SHERIDAN DR MUSKEGON, MI 49442

Date Revised	Description
1/24/2023	OWNER REVIEW
1/31/2023	BIDS
2/7/2023	PERMITS
2/15/2023	ADDENDUM #1



Copyright © Bergmann Associates, Architects, Engineers, Landscape Architects & Surveyors, D.P.C.

Project Manager	Discipline Lead
D HOLTROP	B HUYLER
Designer	Reviewer
E POST	R KEUNEKE
Date Issued	Project Number
2/15/2023	016633.00

Sheet Name

WALL SECTIONS AND DOOR DETAILS

Drawing Number

A321

TYPICAL CEILING DIFFUSER RUN-OUT DETAIL NOT TO SCALE

DIFFUSER, REGISTER & GRILLE SCHEDULE SERVICE MODEL CONTROL **FINISH** REMARKS MARK DAMPER STANDARD WHITE SUPPLY DIFFUSER **UNLESS NOTED OTHERWISE** STANDARD WHITE 1/2" x 1/2" x 1/2", 24"x24" LAY-IN EGGCRATE 50F NO BAKED ENAMEI **UNLESS NOTED OTHERWISE** RETURN STANDARD WHITE 3/4" SPACING, 45° FIXED, SURF 350RL YES GRILLE BAKED ENAMEL BASED ON TITUS.





560 5th St. NW Grand Rapids, MI 49504 www.bergmannpc.com REMARKS 1., 2., 3., 600 LBS

ORCHARD VIEW SCHOOL DISTRICT

BERGMANN

ARCHITECTS ENGINEERS PLANNERS

MIDDLE SCHOOL **KITCHEN** RENOVATIONS

35 S SHERIDAN DR MUSKEGON, MI 49442

Date Revised	Description
1-24-2023	OWNER REVIEW
1-31-2023	BIDS
2-7-2023	PERMITS
2-15-2023	ADDENDUM #1

CHRISTOPHER J. NOLAN, P.E. MI - REGISTRATION# 6201043863 EXP. DATE# 4/14/2023

Copyright © Bergmann Associates, Architects, Engineers,

Landscape Architects & Surveyors, D.P.C.

Project Manager	Discipline Lead
D HOLTROP	B HUYLER
Designer	Reviewer
C SCHOLTEN	C NOLAN
Date Issued	Project Number
2/15/2023	22013309A

Sheet Name

GENERAL **MECHANICAL INFORMATION**

ROOFTOP AIR CONDITIONER UNIT SCHEDULE SERVES ONS SP **POWER** AIR DAMPER MODEL OUTPUT INPUT/ NO. OA MBH OUTPUT SETTING **EXIST KITCHEN 102** 0.7" YSC048E3R0MA**B000B6 1600 48.0 80/64 MBH 208-230V/3PH 26 0.7" SERVING AREA 10 YSC036E3R0MA**B000 1200 0.75 37.0 81/65 MBH 208-230V/3PH 240 1., 2., 3., 600 LBS $\overline{}$

BASED ON TRANE PRECEDENT DOWNFLOW UNIT WITH SINGLE COMPRESSOR AND HOT GAS REHEAT, 2-STAGE MEDIUM GAS HEAT, STANDARD EFFICIENCY, 0-50% MOTORIZED FRESH AIR DAMPER W/ BAROMETRIC RELIEF, STANDARD SERVICE PANELS, 2" MERV 8 FILTERS, STANDARD CONDENSER COIL, UNIT MOUNTED CIRCUIT BREAKER, 7-DAY PROGRAMMABLE T-STAT, & POWERED CONVENIENCE OUTLET.

TO BE PROVIDED WITH 14" ROOF CURB

PROVIDE WITH BACNET CARD FOR INTEGRATION WITH FUTURE BMCS CONTROLS

CONTROL SEQUENCES

RTU-1 & 2: PACKAGED ROOFTOP UNITS

UNIT PROVIDED WITH UNIT CONTROLLER AND SPACE 7-DAY PROGRAMMABLE THERMOSTAT. THERMOSTAT CAPABLE OF NIGHT/WEEKEND SETBACK AND MINIMUM 3° DEADBAND BETWEEN HEATING AND COOLING SETPOINTS.

2. UNIT FAN SHALL OPERATE CONTINUOUSLY DURING OCCUPIED PERIODS; FAN SPEED SHALL REDUCE TO 67% DESIGN CFM DURING STAGE 1 COOLING TO MAINTAIN SPACE TEMPERATURE SETPOINT AND WHEN UNIT IS NOT IN ACTIVE HEATING OR COOLING (ASHRAE 90.1 FAN SPEED REDUCTON). UNIT FAN SHALL REMAIN 'OFF' DURING UNOCCUPIED PERIODS, AND CYCLE 'ON' WITH A CALL FOR HEATING OR COOLING BASED ON SETBACK TEMPERATURE.

UNIT CONTROLS SHALL OPEN UNIT OUTSIDE AIR INTAKE DAMPER TO MINIMUM DESIGN POSITION DURING OCCUPIED PERIODS.

HVAC ABBREVIATIONS

AIR COOLED CONDENSING UNIT ACOUSTICALLY LINED CONDITIONING **APPROX** APPROXIMATE HOT WATER HEATING SUPPLY HOT WATER HEATING RETURN ARCH ARCHITECTURAL **HTGR** CLG CEILING INSUL **INSULATION** CONC CONCRETE LEAVING AIR TEMPERATURE CONN CONNECTION MECHANICAL CONTRACTOR COORD COORDINATION MECH **MECHANICAL** CONDENSATE PUMP MANUFACTURER DB DRY BULB MMS MANUAL MOTOR STARTER NONFUSED DISCONNECT SWITCH DN DOWN DRAWING OA **OUTSIDE AIR** RETURN AIR FACH EAT ENTERING AIR TEMPERATURE RMROOM ROOF TOP UNIT SUPPLY AIR FQUIP **FQUIPMENT ESP** EXTERNAL STATIC PRESSURE SHT SHEET **STORAGE** EXISTING STOR FDS FUSED DISCONNECT SWITCH **TYPICAL** FINISHED FLOOR W/ WITH FLEX **FLEXIBLE** WITHOUT FLR **FLOOR WET BULB FPM** FEET PER MINUTE GALV **GALVANIZED**

HVAC LEGEND					
→ OR ← →	DUCTWORK		CEILING DIFFUSER (ROUND NECK)		
S OR ← S	RECTANGULAR DUCTWORK SUPPLY AIR ELBOW DOWN		RETURN/EXHAUST GRILLE		
OR —	RECTANGULAR DUCTWORK SUPPLY AIR ELBOW UP	- √-	EXHAUST/RETURN AIRFLOW ARROW		
OR L	RECTANGULAR DUCTWORK RETURN AIR, EXHAUST AIR, OR OUTSIDE AIR ELBOW DOWN	→	SUPPLY AIRFLOW ARROW		
	OR OUTSIDE AIR ELBOW DÓWN	\bigcirc	THERMOSTAT/SENSOR		
OR —	RECTANGULAR DUCTWORK RETURN AIR, EXHAUST AIR, OR OUTSIDE AIR ELBOW UP	QUANTITY AIR DEVICE TAG			
OR -	ROUND DUCTWORK ELBOW DOWN	150 EA NECK SIZE AIR FLOW	AIR DEVICE DESIGNATION		
OR —	ROUND DUCTWORK ELBOW UP	CFM			
24x12	RECTANGULAR DUCT SIZE. FIRST NUMBER INDICATES SIZE FOR SIDE SHOWN.		CONNECTION OF NEW ONTO EXISTING		
24 " ø	ROUND DUCT SIZE				

MECHANICAL (DIVISION 23) SPECIFICATION:

GENERAL REQUIREMENTS

PROVIDE EQUIPMENT AND COMPONENTS INDICATED ON THE DRAWINGS, AND AS REQUIRED FOR A COMPLETE FUNCTIONING SYSTEM. CONTRACTOR WILL BE RESPONSIBLE FOR RECEIVING, RIGGING AND INSTALLING ALL EQUIPMENT PROVIDED PART OF THEIR WORK CATEGORY

DEFINITIONS: FURNISH MEANS TO SUPPLY AND DELIVER TO PROJECT SITE, READY FOR INSTALLATION. INSTALL MEANS TO PLACE IN POSITION AND MAKE CONNECTIONS FOR SERVICE OR USE. PROVIDE MEANS TO FURNISH AND INSTALL COMPLETE AND READY FOR INTENDED USE. RECEIVE MEANS TO COORDINATE AND ACCEPT DELIVERY OF EQUIPMENT AT JOBSITE

MECHANICAL EQUIPMENT IDENTIFICATION: PROVIDE ENGRAVED PLASTIC LAMINATE LABEL FOR EACH MAJOR ITEM OF MECHANICAL EQUIPMENT & EACH OPERATIONAL DEVICE. LETTERS TO BE A MINIMUM OF 1/2" HIGH.

OPERATIONS AND MAINTENANCE MANUALS (O&M): AT COMPLETION OF PROJECT PROVIDE A MINIMUM OF TWO O&M MANUALS IN THREE RING BINDERS TO THE OWNER/TENANT. MANUALS SHALL HAVE TABS LABELED WITH ALL SECTIONS SEPARATED WITH A CLEAR INDEX AT THE FRONT. PROVIDE A WARRANTY LETTER AT THE FRONT OF THE MANUAL STATING DATES OF WARRANTY (START DATE AND END DATE) AND CONTACTS WITH PHONE NUMBERS FOR WARRANTY WORK. PROVIDE A NARRATIVE OF HOW EACH SYSTEM IS INTENDED TO OPERATE INCLUDING RECOMMENDED SETPOINTS. MANUALS SHALL INCLUDE SUBMITTALS OF COATED FIBERGLASS FABRIC DUCT CONNECTORS AT DUCT CONNECTIONS TO ALL ALL EQUIPMENT, SIZE AND OPTIONS SELECTED. PROVIDE ALL BALANCING REPORTS. PROVIDE MANUFACTURER LITERATURE FOR OPERATIONS AND MAINTENANCE FOR ALL THE EQUIPMENT ON THE PROJECT. ALL PERIODIC AND ROUTINE MAINTENANCE SHALL BE CLEARLY IDENTIFIED. PROVIDE A CONTROLS SECTION LISTING SYSTEM OPERATING AND CONTROL INSTRUCTIONS. MAINTENANCE, CALIBRATION, WIRING DIAGRAMS, SCHEMATICS AND CONTROL SEQUENCE DESCRIPTIONS.

TESTING AND BALANCING: TEST AND ADJUST ALL MECHANICAL SYSTEMS AND EQUIPMENT TO ASSURE PROPER BALANCE AND OPERATION. PERFORM TESTS IN ACCORDANCE WITH THE MOST CURRENT NEBB OR AABC, AND ASHRAE STANDARDS. ELIMINATE OBJECTIONABLE NOISE AND VIBRATION, AND ASSURE PROPER FUNCTION OF CONTROLS. BALANCING CONTRACTOR SHALL BE AN INDEPENDENT CERTIFIED TEST AND BALANCE CONTRACTOR, WITH NEBB OR AABC CERTIFICATION. SUBMIT COMPLETED AND CERTIFIED TEST AND BALANCE REPORT TO OWNER'S REPRESENTATIVE. BALANCE ALL SYSTEMS TO WITHIN 5% OF AIR FLOWS AND WATER FLOWS INDICATED ON THE DRAWINGS.

GENERAL DUCT REQUIREMENTS

DUCT TURNING VANES: PROVIDE FABRICATED TURNING VANES AND VANE RUNNERS, CONSTRUCTED IN ACCORDANCE WITH SMACNA "HVAC DUCT CONSTRUCTION STANDARDS" AND MATCHING MATERIAL OF DUCT SYSTEM PROVIDE TURNING VANES CONSTRUCTED OF CURVED BLADES, SUPPORTED WITH BARS PERPENDICULAR TO BLADES, AND SET INTO SIDE STRIPS SUITABLE FOR MOUNTING IN DUCTWORK. FOLLOW SMACNA GUIDELINES FOR SPACING, SUPPORT, AND CONSTRUCTION. ALL BLADES SHALL BE DOUBLE THICKNESS AIRFOIL TYPE.

DUCT INSULATION: INDOOR: PROVIDE INSULATION FOR ALL CONCEALED SUPPLY & OA DUCTWORK PROVIDE MINIMUM 1.5" THICK BLANKET TYPE FIBERGLASS INSULATION COMPLYING 700 PSIG RATED, EQUIPPED WITH ACCESS FITTING FOR REFRIGERATION SERVICE, WITH ASTM C-553, TYPE II, WITH FACTORY APPLIED KRAFT BONDED TO ALUMINUM FOIL. REINFORCED WITH FIBERGLASS VAPOR BARRIER/JACKET. JACKET SHALL CONFORM TO ASTM C-1136, TYPE II. INSTALLED R-VALUE SHALL BE 4.2 OR HIGHER WITH A 3/4 PCF DENSITY -OR- PROVIDE MINIMUM 1" THICKNESS INTERNAL ACOUSTIC DUCT LINER (R3.5). INTERNAL DUCT LINER TO BE EQUAL TO JOHNS MANSVILLE LINACOUSTIC RC. NOTE: ALL RECTANGULAR RA & SA DUCTWORK TO BE EXTERIOR PIPE INSULATION SHALL BE PROTECTED WITH EITHER: LINED WITHIN 15' OF EQUIPMENT.

DUCT SEALANT: PROVIDE WATER BASED SYNTHETIC LATEX EMULSION PERMANENTLY FLEXIBLE HIGH VELOCITY DUCT SEALANT, DUCTMATE INDUSTRIES, INC. PRO SEAL OR EQUIVALENT. SEALANT TO BE LOW VOC LEED COMPLIANT CAPABLE OF 15" W.G., NFPA 90A AND 90B APPROVED, UL 181B-M LISTED AND UL 723 CLASSIFIED. INSTALL PER MANUFACTURER INSTRUCTIONS. SEALANT SHALL BE APPROVED FOR PLENUM INSTALLATIONS AND MEET FLAME SPREAD AND SMOKE BEVET OF THE TOP OF THE PROPERTY OF THE PROPER INSTALLED IN ACCORDANCE WITH ASHRAE AND SMACNA STANDARDS, FOR 2" W.G. PRESSURE CLASS, SEAL CLASS "A" (UNLESS OTHERWISE INDICATED ON DUCT SYSTEM SCHEDULE). SHEETMETAL SHALL BE GALVANIZED SHEET STEEL OF LOCK FORMING QUALITY, WITH G60 ZINC COATING. SHEET STEEL SHALL COMPLY WITH

GENERAL DUCT REQUIREMENTS CONTINUED

ASTM A653 STANDARD SPECIFICATION FOR STEEL SHEETMETAL, ALL ANGLE IRON USED FOR SUPPORT SHALL BE GALVANIZED. SEAL ALL DUCT SEAMS, TRANSVERSE AND LONGITUDINAL, AIR TIGHT. PROVIDE TURNING VANES AT ALL 90° ELBOWS.

RECTANGULAR VOLUME DAMPERS: PROVIDE MINIMUM 16 GAUGE GALV STEEL CHANNEL FRAME, 16 GAUGE GALVANIZED STEEL BLADES, MINIMUM 1/2" HEXAGONAL AXLE, MOLDED SYNTHETIC BEARINGS, WITH 3/8" SQUARE PLATED STEEL CONTROL SHAFT. LINKAGES SHALL BE CONCEALED IN THE FRAME. OPERATING SHAFT SHALL EXTEND BEYOND FRAME AND DUCT TO A LOCKING QUADRANT WITH ADJUSTABLE LEVER. MAXIMUM BLADE WIDTH SHALL NOT EXCEED 6".

ROUND VOLUME DAMPERS: PROVIDE ROUND MANUAL BALANCING DAMPER AT ALL RUN OUTS TO CEILING SUPPLY AIR DIFFUSERS. PROVIDE MINIMUM 20 GAUGE GALVANIZED STEEL FRAME AND BLADES, MINIMUM 3/8" SQUARE STEEL AXLE, MOLDED SYNTHETIC BEARINGS. WITH LOCKING POSITION REGULATOR. REGULATOR SHALL BE POSITIONED WITH SHEETMETAL BRACKET BEYOND DUCT COVERING. WHERE POSITIONING REGULATOR IS NOT ACCESSIBLE, PROVIDE COUPLING AND EXTENSION ROD WITH REGULATOR FOR CEILING OR WALL INSTALLATION, AS REQUIRED.

FLEXIBLE DUCT CONNECTORS: PROVIDE U.L. LABELED 30 OUNCE NEOPRENE VIBRATING EQUIPMENT.

PIPING REQUIREMENTS

NATURAL GAS PIPING:

NATURAL GAS PIPING: ALL NATURAL GAS PIPING SHALL BE SCH 40 STEEL PIPE, ASTM A53, WITH SCREWED JOINTS AND 150 LB MALLEABLE IRON FITTINGS FOR NPS 2" AND SMALLER, AND SCH 40 WELDED JOINTS AND FITTINGS FOR NPS 2-1/2" AND LARGER. PRESSURE TEST NEW GAS PIPE SYSTEMS TO 5 PSI FOR 30 MINUTES WITH NO LOSS OF PRESSURE BEFORE PLACING INTO SERVICE. LEAK TEST ALL GAS PIPE SCREWED JOINTS AND UNIONS BEFORE PLACING INTO SERVICE.

SHUTOFF/STOP VALVES: CWP RATED 125 PSIG BRONZE OR CAST IRON PLUG VALVE

APPLIANCE GAS VALES: CWP RATED 125 PSIG BRONZE OR CAST IRON PLUG VALVE

APPLIANCE PRESSURE REGULATORS: CAST IRON OR DIE CAST ALUMINUM BODY, SPRING DIAPHRAGM TYPE, ANSI Z21.18, REFER TO PLANS FOR CAPACITY AND PRESSURE TURNDOWN REQUIREMENTS, STAINLESS STEEL VENT SCREEN, INSTALL IN ORIENTATION THAT PREVENTS WATER INTRUSION INTO VENT OPENING PER MFGR INSTRUCTIONS.

REFRIGERANT PIPING:

ALL REFRIGERATION PIPING SHALL BE TYPE ACR COPPER TUBE, ASTM B-88, WITH BRAZED OR FLARED JOINTS AND FITTINGS, INSTALLED PER MFG'S INSTRUCTION.

SERVICE AND ISOLATION VALVES, FORGED BRASS BODY AND CAP, PTFE SEATS & GASKETS, MALE SAE FLARE X FEMALE SAE FLARE, FULL PORT UNI-BODY DESIGN, CAPABLE OFF VALVE OPERATION WITHOUT REMOVAL OF SEAL CAP.

PROVIDE AP ARMAFLEX BLACK LAPSEAL PRE-FORMED PIPE FLEXIBLE CLOSED

CELL INSULATION FOR ALL INTERIOR AND EXTERIOR REFRIGERATION PIPING.

VENTURE-CALD JACKETING

2. BRUSH APPLIED ARMAFLEX WB WHITE UV RESISTANT COATING.

PROVIDE ADJUSTABLE CLEVIS STYLE HANGER FOR INDIVIDUAL HORIZONTAL PIPING LESS THAN 20 FT LONG. SUPPORT PIPE HANGERS WITH TREADED HANGER RODS: 1/4" THREADED HANGER RODS FOR PIPE SIZES UP TO 1-1/2". EXTERIOR PIPE SUPPORTS ON ROOF SHALL BE RUBBER BLOCK BASE STYLE WITH GALVANIZED STRUT WITH SLIP SHEET OF ROOFING MEMBRANE MATERIAL BETWEEN BASE AND ROOF: ATTACH PIPE TO UNISTRUT RAIL USING CUSHIONED PIPE/TUBE CLAMPS.

ALL BUILDING CONNECTIONS SHALL BE WITH BEAM CLAMPS TO TOP OF STRUCTURAL JOIST/TRUSS, OR TO BOTTOM FLANGE OF SOLID BEAM SHAPES. WHERE NO STRUCTURAL STEEL IS AVAILABLE FOR HANGING, CONCRETE EXPANSION WEDGE ANCHORS SHALL BE ANCHORED TO CONCRETE ROOF STRUCTURE.

MECH CODE COMPLIANCE NOTES:

- CONTRACTOR SHALL BE RESPONSIBLE FOR INSTALLATION OF SYSTEM IN COMPLIANCE WITH 2015 MICHIGAN MECHANICAL CODE (MMC), ASHRAE 90.1-2013 AND ALL OTHER APPLICABLE STATE AND LOCAL CODES
- FOR CLASSROOMS AND OFFICES WITH NEW HEATPUMPS VENTILATION TO BE ACHIEVED BY EXISTING HVAC EQUIPMENT AND SYSTEMS. MC TO VERIFY OPERATION OF EXISTING SYSTEMS IN AREAS OF NEW WORK.
- VENTILATION FOR ADMIN AND VESTIBULE SPACE PROVIDED BY ROOFTOP UNIT WITH MOTORIZED FRESH AIR DAMPER, RATES PER 2015 MICHIGAN MECHANICAL CODE (MMC), REFER VENTILATION SCHEDULE ON THIS
- SYSTEMS AS DESIGNED AND EQUIPMENT AS SPECIFIED MEET OR EXCEED THE MINIMUM PRESCRIPTIVE REQUIREMETNS OF THE MICHIGAN ENERGY CODE ASHRAE 90.1-2013.
- NO NEW HVAC SYSTEM ABOVE 2000 CFM; NO DUCT SMOKE DETECTORS WILL BE PROVIDED FOR HVAC SYSTEMS WITH CAPACITIES LESS THAN 2000 CFM PER 2015 MMC 606.2.1.
- ALL NEW NATURAL GAS PIPING HAS BEEN SIZED BASED ON THE BRANCH LENGTH METHOD OF 2018 INTERNATIONAL FUEL GAS CODE (IFGC); CONTRACTOR SHALL INSTALL GAS PIPING SYSTEM SHOWN IN ACCORDANCE WITH 2015 IFGC. (SEE PLANS)

GENERAL NOTES:

- CONTRACTOR SHALL INCLUDE ALL APPLICABLE SALES AND USE TAXES FOR MATERIAL AND EQUIPMENT PROVIDED AS REQUIRED.
- CONTRACTOR RESPONSIBLE FOR CREATING OPENINGS THRU ANY ROOFS, CEILINGS AND WALLS FOR THEIR DUCT AND PIPING SYSTEMS; OVERSIZE OPENING AS REQUIRED TO ACCOUNT FOR THERMAL EXPANSION. UTILIZE PIPE ROOF JACK FOR ROOF PIPE PENETRATIONS THROUGH ROOF AND SEAL WEATHERTIGHT.
- ALL DUCTWORK IS TO BE INSTALLED PER LATEST EDITION OF SMACNA "HVAC DUCT CONSTRUCTION
- DUCTWORK DIMENSIONS SHOWN ARE CLEAR INSIDE DIMENSIONS.

STANDARDS - METAL AND FLEXIBLE".

- ROUTE ALL DUCTWORK AND PIPE AT RIGHT ANGLES TO WALLS, INSTALL HORIZONTAL PIPE DEAD LEVEL UNLESS IDENTIFIED OTHERWISE.
- CONTRACTOR SHALL FURNISH & INSTALL HANGERS AND BUILDING ATTACHMENTS AS REQUIRED FOR ALL DUCTWORK AND PIPING SYSTEMS.
- ALL DUCT, PIPE AND CONDUIT PENETRATIONS OF THE OFFICE AREA WALLS AND CEILINGS SHALL BE SEALED AIRTIGHT WITH ZERO LIGHT TRESPASS AROUND OPENING.
- PROVIDE 1 YEAR WARRANTY ON WORKMANSHIP.

GENERAL PLUMBING DEMOLITION NOTES:

- ALL EXISTING PIPING AND EQUIPMENT SHOWN AS DASHED OR CROSS HATCHED SHALL BE REMOVED. PROTECT EXISTING WORK WHICH IS TO REMAIN IN PLACE FOR REUSE WITH TEMPORARY COVERS, SHORING, BRACING, AND SUPPORTS.
- 2. ALL EQUIPMENT TO BE REMOVED SHALL BE INSPECTED AND REVIEWED BY THE OWNER FOR POSSIBLE REUSE. EXCEPT WHERE INDICATED OTHERWISE, ALL MATERIALS AND EQUIPMENT REMOVED AND NOT REUSED SHALL BECOME THE PROPERTY OF THE CONTRACTOR AND SHALL BE REMOVED FROM THE OWNERS
- DO NOT INTERRUPT OR CONNECT INTO ANY SERVICE PIPING, ELECTRICAL, OR INSTRUMENTATION WORK WITHOUT PRIOR APPROVAL FROM THE OWNERS REPRESENTATIVE.
- 4. CONTRACTOR SHALL FIELD VERIFY LOCATION(S) OF EXISTING PIPING OR EQUIPMENT TO BE REMOVED.
- 5. COORDINATE WITH GENERAL CONTRACTOR FOR WALL, ROOF, CEILING, AND FLOOR REPAIR WORK LEFT BY REMOVED ITEMS.

KEYED PLUMBING DEMOLITION NOTES:

- $\overline{1}$ CAP EXISTING WASTE TO DEMO'D FIXTURE BELOW FLOOR.
- REMOVE EXISTING SINK AND TRIM. CAP WASTE IN WALL. REMOVE HOT AND COLD WATER PIPING BACK FOR NEW HAND SINK CONNECTION.
- REMOVE EXISTING DRINKING FOUNTAIN AND TRIM. CAP WASTE BELOW FLOOR. REMOVE VENT AND COLD WATER PIPING BACK TO NEAREST MAIN OR TEE AND
- REMOVE EXISTING HOSE BIBB. REMOVE COLD WATER PIPING BACK TO NEAREST
- MAIN OR TEE AND CAP.

THIS AREA, REFER TO FSEC DEMO PLAN FOR INFO.

- 6 DISCONNECT & CAP 1/2" HW & CW FROM DEMO'D SOILED DISHTABLE IN
- DISCONNECT & CAP ½" HW & ¾" CW FROM DEMO'D DISHWASHER IN THIS AREA, REFER TO FSEC DEMO PLAN FOR INFO.
- DISCONNECT & CAP ½" HW & ¾" CW FROM DEMO'D DISPOSER IN THIS

GENERAL PLUMBING NOTES:

- 1. THESE DRAWINGS ARE DIAGRAMMATIC, AND INDICATE THE GENERAL EXTENT OF THE WORK. THE CONTRACTOR SHALL BE RESPONSIBLE FOR COORDINATION WITH ALL OTHER TRADES AND FOR PROPER INSTALLATION OF ALL PLUMBING SYSTEMS AND COMPONENTS IN ACCORDANCE WITH 2018 MICHIGAN PLUMBING CODE REQUIREMENTS.
- 2. ROUTE ALL SANITARY & WASTE PIPING 2½" AND LARGER AT ½" FALL PER FOOT UNLESS OTHERWISE NOTES; ROUTE ALL SANITARY & WASTE PIPING 2" AND SMALLER AT ½" FALL PER FOOT UNLESS OTHERWISE NOTED.

KEYED PLUMBING NOTES:

- NEW HAND SINK PROVIDED & INSTALLED BY FOOD SERVICE CONTRACTOR, PC TO PROVIDE ½" CW & ½" HW STUB W/ STOP VALVE AND 1½" DIRECT DRAIN AS REQ FOR CONN BY FOOD SERVICE CONTRACTOR. PROVIDE ASSE 1070 TEMPERATURE AND PRESSURE REGULATING DEVICE AT FIXTURE, REFER TO FOOD SERVICE DRAWINGS FOR ADDITIONAL INFORMATION.
- CONN FIXTURE TRAP LET TO COMBINATION WASTE&VENT UNDERGROUND AS SHOWN. INSTALL FIXTURE TRAP WITHIN MAXIMUM DISTANCE ALLOWED FROM VENT PER 2018 MPC TABLE 909.1 (6'-0" FOR 1½" TRAP)
- (P3) ROUTE PIPING DOWN EXPOSED ON WALL.
- CONN NEW FIXTURE VENT TO EXISTING VENT THRU ROOF PIPING. FIELD VERIFY SIZE & ACTUAL LOC.
- P5) ½" HW UNDERGROUND TO HOT WELL TABLE. PIPE TO BE TYPE 'A' PEX.
 - RECONNECT 3" INLET AND OUTLET OF DEMO'D GREASE INTERCEPTOR WITH NEW PIPE. INFILL WITH CONCRETE AND PROVIDE 16 GA 316 STAINLESS COVER OVER CONCRETE. CAULK COVER TO FLOOR.

FIXTURE UNIT VALUES					
	SUPPLY b				
FIXTURE	DFU	HW	CW	TOTAL	
SINK (PRIVATE)	2	1	1	1.4	
EWC/DRINKING FOUNTAIN	0.5		0.25	0.25	
FLOOR DRAIN (3" TRAP)	5				

5210 West River Dr NE-Suite C Comstock Park MI 49321

ABILITY

ENGINEERING

ENGINEERING - DESIGN - CONSULTING

616-232-5817

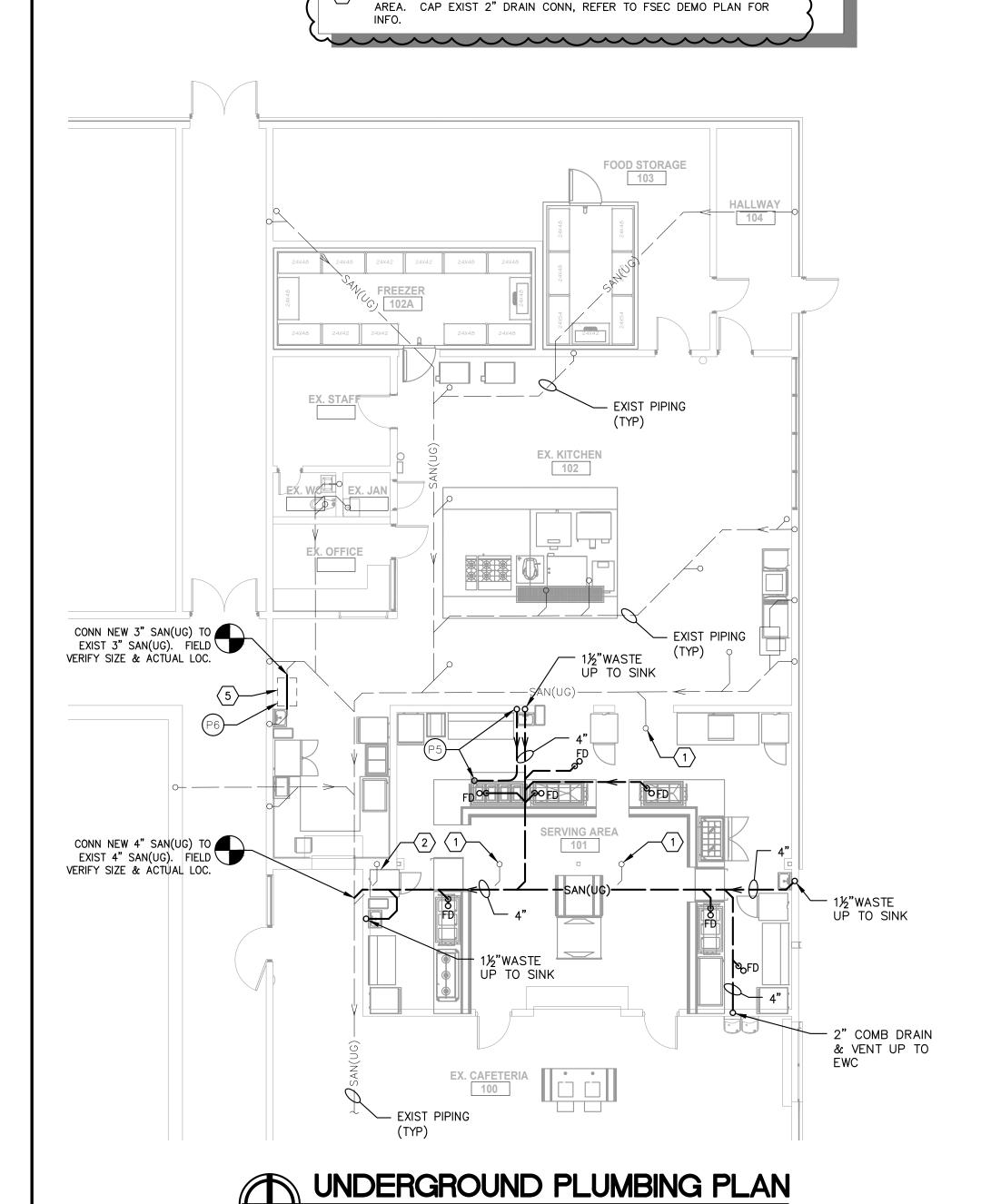
- DRAINAGE FIXTURE UNIT VALUES (DFU) TAKEN FROM Michigan Plumbing Code/2018, CHAPTER 7, TABLE 709.1.
- SUPPLY FIXTURE UNIT VALUES TAKEN FROM Michigan Plumbing Code/2018, APPENDIX E, TABLE E103.3(2).

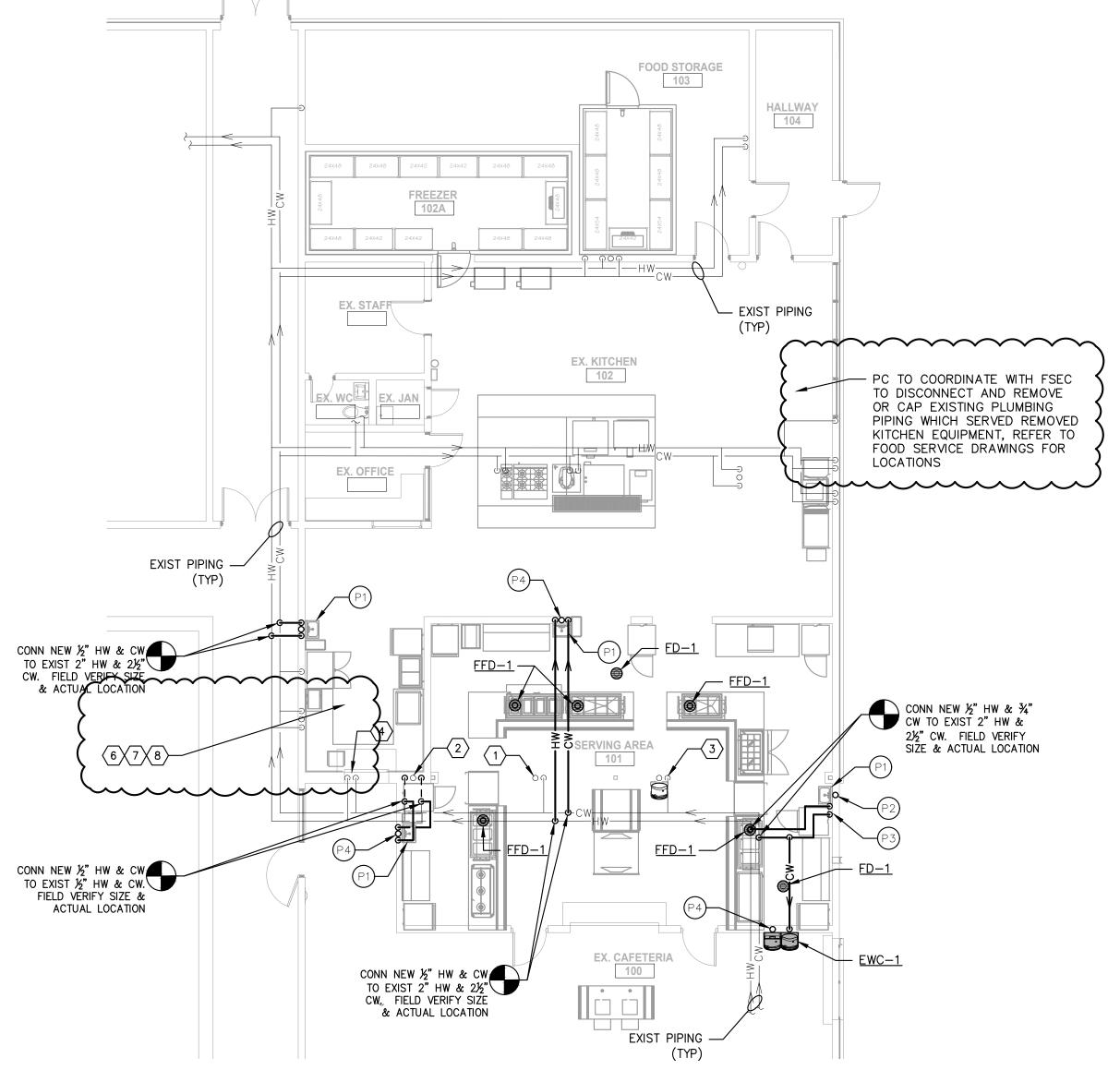
MINIMUM SIZE CONNECTION					
FIXTURE	SAN	HW	CW	VENT	
SINK	1 1/2"	1/2"	1/2"	1 1/2"	
ELECTRIC WATER COOLER	1 1/4"		1/2"	1 1/4"	
FLOOR DRAIN	3"			1 1/2"	

WATER HAMMER ARRESTOR LEGEND				
MBOL	PDI RATING	FIXTURE UNIT CAP		
(A)	A	1–11		

<u>NOTES</u>

 PLUMBING CONTRACTOR SHALL BE RESPONSIBLE FOR THE PROPER PLACEMENT OF WATER HAMMER ARRESTORS. REFER TO MANUFACTURER'S RECOMMENDATIONS.









560 5th St. NW Suite 305 Grand Rapids, MI 49504

www.bergmannpc.com

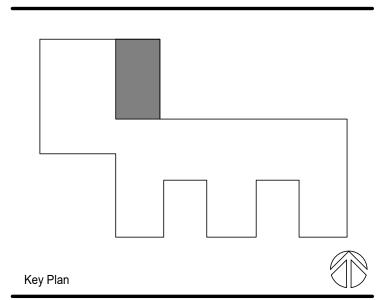
ORCHARD VIEW SCHOOL DISTRICT

MIDDLE SCHOOL KITCHEN RENOVATIONS

35 S SHERIDAN DR MUSKEGON, MI 49442

l	
Date Revised	Description
1-24-2023	OWNER REVIEW
1-31-2023	BIDS
2-7-2023	PERMITS
2-15-2023	ADDENDUM #1

CHRISTOPHER J. NOLAN, P.E. MI - REGISTRATION# 6201043863 EXP. DATE# 4/14/2023



Copyright © Bergmann Associates, Architects, Engineers, Landscape Architects & Surveyors, D.P.C.

Project Manager	Discipline Lead
D HOLTROP	B HUYLER
Designer	Reviewer
C SCHOLTEN	C NOLAN
Date Issued	Project Number
2/15/2023	22013309A

Sheet Name

PLUMBING PLANS

awing Number

P101